DOCUMENT RESUME

ED 236 864 EC 160 885

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TITLE	Non Test-Based Assessment: Trainer Manual
INSTITUTION	Minnesota Univ., Minneapolis. National School Psychology Inservice Training Network.
SPONS AGENCY	Office of Special Education and Rehabilitative Services (ED), Washington, DC.
PUB DATE	81
GRANT	G00784657
NOTE	497p.; For related documents, see EC 160 883-884.
AVAILABLE FROM	National School Psychology Inservice Training Network, Psychology in the School Program, N532 Elliott Hall, 75 E. River Rd., Minneapolis, MN 55455 ($72.00).
PUB TYPE	Guides - Non-Classroom Use (055)
EDRS PRICE	MF02 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS	Curriculum; *Disabilities; Elementary Secondary Education; *Informal Assessment; *Interviews; *School Psychologists; *Student Evaluation; Workshops

ABSTRACT

The manual presents information for school psychologists on non-test-based assessment for children with suspected handicapping conditions. The information is provided in a workshop format, with instructions for presenters (objectives, content outlines, and lesson plans). It is explained that non-test-based assessment is meant to complement standardized norm-referenced methods. Each of four units includes a user's guide, script for the presenter, transparencies to be used in the session, workbook activities, and a resource guide. The first unit presents an introduction and overview to non-test-based assessment, including information on variables producing assessment errors and common categories of a comprehensive individual assessment. The second unit focuses on observation based assessment with attention on data collection and behavior measurement. Interview based assesssment is the topic of the third unit which considers, among other subjects, interviewing skills, components of effective interviews, and analysis of interview data. The final type of assessment data discussed is curriculum based assessment. Among areas covered are its applications to reading and mathematics. (CL)

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ED236864

NON TEST-BASED ASSESSMENT

James A. Tucker
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Educational Directions Incorporated
Austin, Texas

TRAINER MANUAL

EC 160885

A project of The National School Psychology Inservice Training Network
University of Minnesota, Minneapolis, Minnesota

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The project presented herein was supported by Grant No. G00784657 from the Office of Special Education to the University of Minnesota. The points of view expressed in this publication are those of the authors and do not necessarily reflect the positions of the U.S. Department of Education and no official endorsement by the U.S. Department of Education should be inferred.

The material presented herein is one of three modules developed and produced for The National School Psychology Training Network, James Ysseldyke, Director.

Minneapolis, Minnesota
1981

Additional copies of this module may be ordered from the Upper Midwest Regional Resource Center, 2037 University Avenue S.E., Suite 101, University of Minnesota, Minneapolis, Minnesota 55414. Prices for single and multiple copies will be furnished upon request.

Foreword

The recent and significant revisions in public policy on the education of handicapped students are reflected in the intent and provisions of Public Law 94-142. Implicit in the Law is the need for profound changes in the roles, training, and retraining of all public school personnel, especially teachers and school psychologists, who are directly involved in the placement and educational programing of all pupils with any degree of handicap. Since school psychology is a basic resource for all educators, the National School Psychology Inservice Training Network has been engaged in the development of inservice training materials designed expressly for the purpose of providing training to practicing school psychologists in the use of innovative assessment procedures that will enable them to assist the schools and special and regular education teachers to comply with the provisions of PL 94-142. The Network, funded by the U.S. Office of Special Education, has worked for the past two years as a temporary system in support of the standing structures relevant to the profession of school psychology (i.e., State School Psychology Consultants, the National Association of School Psychologists, the School Psychology Division of the American Psychological Association, the Council of Directors of School Psychology Programs, State and Local School Psychology Associations).

Broadly speaking, the primary responsibility of school psychologists always has been and will continue to be one working with teachers to facilitate learning by children. In meeting this responsibility, school psychologists bring to education a rich background in the theory and applications of psychology, from the principles derived in experimental laboratories to those derived in clinical settings. Indeed, school psychology is in some sense responsible and accountable for making the principles of educational psychology, developmental psychology, clinical psychology, and general psychology available to school personnel in order to enhance children's learning. Throughout this module, school psychology is conceptualized within this broad context.

School psychologists have had and will continue to have considerable responsibility for the psychoeducational decisions that affect the placement and programing of handicapped children. Currently, approximately 12,000 school psychologists are employed in the nation's schools. Because of the tremendous diversity in the nature and level of training which has been available to them, school psychologists demonstrate considerable variance in competency for the functions they will be required to carry out under P.L. 94-142. The knowledge base exists to ensure their competency to comply with legislative mandates; to date, however, no systematic national effort had been made to assure that handicapped children are served by highly competent school psychologists.

The variance in competency displayed by school psychologists indicates the lack of a consistent conception of their role and, thus, of preparation. This module, and others prepared by the Network represent an initial effort to provide a needed training resource.

Special appreciation is extended to the many professionals who have played significant roles in the guidance of the Network and in advising us in our efforts along the way. Many school psychologists have participated in field testing of these materials, either at local meetings or at preconvention workshops held at the annual meetings of NASP or APA. Their feedback on initial drafts of these materials contributed to a better final product. Professors Maynard Reynolds and Richard Weinberg at Minnesota, Network co-investigators, contributed significantly to the initial impetus for this effort. Joel Meyers, Professor of School Psychology at Temple University, spent his sabbatical during the 1979-80 academic year as Director of the Network, being assisted in his efforts by Maureen Koenen. Jacqueline Schakel did the technical editing necessary to produce this final product.

James Tucker, the coordinator of efforts to develop this module, deserves special recognition for identifying those professionals who could best contribute to the development of this module, and for working so very hard to bring to fruition their efforts and produce a product to assist school psychologists in the fair assessment of students.

James E. Ysseldyke
Director
National School Psychology Inservice Training Network

ACKNOWLEDGMENTS

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Ongoing support and guidance was provided from the National School Psychology Inservice Training Network by:

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Maureen Koenen

The module also was reviewed and constructively evaluated by members of the Task Force for the National School Psychology Inservice Training Network. They include Jack Bardon, Ann Engin, Leon Hall, Walter Hodges, Sylvia Rosenfield, Winfred Tillery, James Tucker, and LaMonte Wyche.

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INTRODUCTION AND OVERVIEW (I&O)

USER'S GUIDE FOR I&O

USAGE SUMMARY

Rationale

The Introduction and Overview section is designed to present the basic assumptions on which non-test-based assessment is formulated. Assessment is a popular and often controversial subject in education. With the continuing controversy regarding standardized norm-referenced tests it is easy to simply criticize what is traditionally used. But rather than merely criticize, this module is designed to offer adjunctive methods whereby traditional procedures are maintained and assessment improved by adding other dimensions. Non-test-based assessment is not a replacement for standardized, norm-referenced testing but a companion to it. The purpose of the Introduction and Overview is to describe the assumptions and context for non-test-based assessment and its contribution to a comprehensive individual assessment.

User

This section is one of four components of the module on NON-TEST-BASED ASSESSMENT. It should be presented prior to any of the other three major sections in the package. The short time period required for presentation makes it useful as a short workshop in which participants have an opportunity to understand the rationale and format of non-test-based assessment in general and the module in particular.

Directions to Presenter

While a script is provided, presenters should be familiar enough with the workshop so that the script is not "read" to the participants. The session will be far more interesting if presenters make the workshop their own, modifying the script and examples to suit their individual styles. Please be aware that it is often tempting to criticize or condemn standardized, norm-referenced testing. Such is not the purpose or the intent of this module. Non-test-based assessment is a necessary and helpful addition to the appropriate use of standardized, norm-referenced assessment and professional judgment.

INTRODUCTION AND OVERVIEW WORKSHOP OBJECTIVES

Upon completion of this Introduction and Overview section, the participants will be able to:

1. Identify the variables that are sources of error in assessment.
2. Cite common categories of a comprehensive individual assessment.
3. Note the three forms of relevancy that non-test-based assessment addresses.
4. Recognize the structure of the NON-TEST-BASED ASSESSMENT module.

To meet these objectives, the learner will:

- —complete the worksheets for the Introduction and Overview workshop.
- —participate in the group activities.

CONTENT OUTLINE

I. THE ASSUMPTIONS REGARDING SOURCES OF VARIANCE IN ASSESSMENT
   - A. Student Related Variables
   - B. Examiner Related Variables
   - C. Testing Environment Related Variables

II. A CONTEXT FOR COMPREHENSIVE INDIVIDUAL ASSESSMENT
   - A. Referral to Placement as an Assessment Context
   - B. Parent Involvement Factors

III. THREE FORMS OF RELEVANCY IN ASSESSMENT
   - A. Expectancy Factors
   - B. Situation Specific Behavior
   - C. Implications for Intervention

IV. A SAMPLE CASE

V. A BRIEF DESCRIPTION OF NON-TEST-BASED ASSESSMENT
   - A. Interview Based Assessment
   - B. Observation Based Assessment
   - C. Curriculum Based Assessment

WORKSHOP LESSON PLAN

Materials

1. Worksheets for participants
2. Transparencies
3. Overhead projector and screen
4. Newsprint or poster paper and waterbased markers

Sequence of Events

	Time Estimate (in minutes)
1. Welcome and Introduction	5-10
2. Context and Assumptions of Assessment	30
3. Three Forms of Relevancy in Assessment	20
4. A Sample Case	15
5. Module Description and Questions	15
TOTAL MINUTES	90

SCRIPT FOR I & O

PRESENTATION
NON-TEST-BASED ASSESSMENT: AN OVERVIEW

To discover the needs of students and the best methods and curricula through which to meet those needs have been the primary purposes of assessment. Salvia and Ysseldyke define assessment as "the process of understanding the performance of students in their current ecology" (p. 4). Specific to public schools, psychological assessment has been defined as "the evaluation of an individual using tests, observation, and other procedures which result in the identification of behaviors or other criteria to determine the presence or absence of a handicap for placement for special services and/or the specification of strengths and weaknesses and precise sequences in programming services for intervention" (Coulter and Morrow, 1978).

SHOW TRANSPARENCY 1

As you can see on page 1 of your workbook materials (W-1), psychological assessment has two purposes: Identification/placement and intervention/programming. As we consider assessment in this module we will be sensitive to the purpose for which we are using an assessment procedure. The definition implies that the purpose of the assessment in part determines what procedure or test will be used. In this module, non-test-based methods will be emphasized as an adjunct to widely used standardized tests.

Each procedure or method needs to be evaluated by looking at the purpose it serves in assessment as well as traditional factors such as reliability and validity.

Assessment, conceived with the noblest of purposes (to find children in need and to determine how best to meet their needs), is based on certain assumptions. These assumptions affect the validity and interpretation of assessment procedures. While undoubtedly important, these assumptions are often ignored or obscured in the push to assess as many students as possible. Take a few moments to study page 2 in the workbook. Write a few variables for each of the categories: student related variables, examiner related variables, and testing environment related variables.

Give the participants approximately 5 to 7 minutes to complete the task. At the close of the time period say:

"Now let's see how everyone did. Someone give me one item that you listed under student-related variables."

Select someone in the audience to volunteer a response. Write it on the chalk board or on newsprint.

Collect at least five responses from throughout the audience for the student variables category. Then move on to the next category—examiner related variables.

When you have at least five responses there move on to the final category—testing environment related variables.

After collecting a few responses to the final category and writing them on the chalkboard or newsprint, say:

"Let's compare what we have generated with some commonly mentioned responses."

SHOW TRANSPARENCY 2

Allow time for participants to check their responses against those on the transparency and copy information if necessary.

SHOW TRANSPARENCY 3

Allow time for participants to check their responses against those on the transparency. You might ask if anyone would like to discuss the responses noted on the transparency.

SHOW TRANSPARENCY 4

Allow time for participants to check their responses against those on this transparency also. Ask if there are any questions.

It is important to remember that regardless of the assessment approach, formal or informal, criterion-referenced or norm-referenced, these previously mentioned variables will affect our description of the child. In the enthusiasm for non-test-based procedures, we should not forget that these methods are just as susceptible to error. Additional variables for page 2 of your worksheets are found on pages 8 and 9 of your worksheets.

When we begin to describe a child and his or her particular characteristics we usually have a framework for organizing our information. On page 3 of your worksheets, you will find a commonly used framework as an example.

SHOW TRANSPARENCY 5

You can see that the process begins when a child is referred—upper left hand corner—and proceeds under certain circumstances to the point where a child is placed in a special program—lower center.

Point to these two places on Transparency 5.

The first step following referral is insuring that there are observational data available which are pertinent to the referral problem. As you scan the diagram you can see that parent contacts, in the center portion, are routine and frequent. As we begin to collect more information on the student in the areas noted on the right, priorities are established for our data collection. Language and educational information are basic and indispensible. As you scan down the right side of the diagram the comprehensiveness of our description of the child increases.

We conceive of non-test-based methods as integral parts of assessment, complementary to standardized, norm-referenced techniques. Observation, a non-test-based procedure to be discussed during the workshop, appears first on the diagram. We recognize the need for a broad range of methods in assessment and this module is one way of expanding that range for school psychologists and other assessment personnel.

The relevance of assessment or, more commonly, testing has been frequently criticized by teachers and parents from three perspectives. First, when we assess and report our findings one comment that may be heard is "you didn't tell me anything I didn't already know." The information was redundant. A person who makes such a statement probably had different expectations for the results of the assessment.

Second, a person might reply, "It doesn't apply to my problem or situation." In this case, we may have failed to consider situation-specific behavior. When we evaluate any behavior we must do so in terms of the environment in which it is measured and the norms that apply to that environment. It is critical to our discussion that we recognize that behavior in one environment may not apply or appear similar in another environment.

A third comment might be "There is nothing practical that I can do from what you have said." Many consumers of assessment services are interested in what they can do or change in what they have been doing as a result of the assessment. This third form of relevancy, practical relevancy, is particularly important when a child's individual educational program is being formulated.

SHOW TRANSPARENCY 6

Given these three forms of criticism of the relevancy of testing, it is important to insure that assessment, or at least part of assessment, addresses the issues of expectation, situation specificity and implications for intervention. Non-test-based assessment is predicated on addressing these issues.

Interview based assessment, the first component in this training package, is designed to incorporate the expectations and concerns of all those who are associated with the referral. By systematically involving a number of concerned persons including parents and the student, when appropriate, interview based assessment seeks to diminish the possibility of failing to address expectations.

Observation based assessment, the second component, encourages the direct study of the referred student in a variety of settings. While behavior rating scales can be helpful in narrowing the behaviors of concern, only systematic observation offers the necessary precision on which to base eligiblity decisions and intervention recommendations.

Mischel, in his classic book *Personality and Assessment*, states, "Global traits and states are excessively gross units to encompass adequately the extraordinary complexity and subtlety of the discriminations people constantly make." (p. 301). Observation based assessment helps us deal with situation specific behavior and apply assessment directly to the problem.

Curriculum based assessment, the third component, allows the school psychologist or other assessment person to directly measure children's performance in the curricula which they are assigned. Most school psychologists have been trained to administer and interpret a variety of achievement tests to make inferences about a child's level of academic functioning. We recognize that grade levels obtained from such tests are gross scores at best but they are widely reported nonetheless. What relation does such a score have to how the child is functioning in the reading series used in the classroom? If we try to interpret the score on the achievement test as a meaningful reflection of how the child can function in a series like *Keys to Reading*, for example, we must make an interpretive leap without any empirical bridge between the test and the curriculum. If the reading curriculum is changed to *Distar* does our interpretation of the score remain the same? Of course not!

Jenkins and Pany have addressed these issues in a simple study which you or I could repeat or extend to other grade levels. They compared the words taught in several curricula with the words tested in several achievement tests. They report, "The overlap is reported in terms of grade equivale scores that appear both as items on an achievement test and a instructional content in a reading series." (p. 450)

SHOW TRANSPARENCY 7

This table is reproduced for you on page 4 of your worksheets. Notice the extent of difference for the various tests for any one reading curriculum. As you can see, a child who mastered the words from the SRA reading program at the first grade level could score at grade level 2.1 on the WRAT and 1.0 on the SORT. Also notice the range of difference for one test across the reading curricula.

Pause to let the participants study the table. Answer any questions that may come up with reference to the data presented in the table.

This information has implications for program evaluation—how accurate are achievement tests in telling us if special education is working? But specific to our purposes, the implications for assessing individual students are startling. As you can see grade level scores fluctuate depending on the series to which the child has been exposed and the test administered. Grade level is an illusive concept and its use may be damaging in several ways if we base our decision solely on scores from an achievement test.

Of course, no one bases interpretation solely on test scores present day assessment. We also report how the ch performs on the test. What are the particular skills that t child exhibits? Does she or he know all the vowel sounds, consonants, etc? This skill information is very important for instructional planning; but we still may be biasing our appraisal of the child's performance. We know that different curricula are structured and sequenced differently. The level of difficulty, something we will learn to measure in this training package, will vary from curriculum to curriculum.

The recommendations we make should be embedded in the curricula to which the child is assigned.

Curriculum based assessment helps us answer the question "What can I do in the classroom?" by compiling performance data directly using the curriculum to which the child is assigned. As you will see we can measure what the child knows and doesn't know, and make judgments about the appropriateness of the instructional match.

It is interesting to note that Stanley Deno and others have demonstrated that results of assessment using one minute directed samples of reading, written expression, and spelling correlate highly with standardized test results for both regular and learning disabled children. This method, termed formative evaluation, is especially suitable for determining a child's acquisition of those skills over time. Because the samples can come directly from the curricula this could be conceived as another form of curriculum-based assessment.

Are there any questions?

Pause to answer questions and discuss the issues *briefly*. All of these points will be dealt with in detail in late sections of the training package.

Consider this situation. Rick is a third grade boy referred by his teachers because he is failing in his academic work. He becomes frustrated easily and says he is ashamed to come to school. The teachers are perplexed because his oral work and discussions in class indicate that he should be above average. You will find the referral form on page 5 of your worksheets. Scan the referral and begin to formulate questions you might have regarding Rick.

Pause to let participants read the referral. After a few minutes say . . .

On the basis of this referral we would recommend an interview as the first step. In this training package, interview based assessment can be used in a number of different ways, but our purpose in Rick's case would be to gather additional referral information and determine the questions which each person interviewed wishes to have answered during the comprehensive individual assessment.

Two of Rick's teachers are drinking coffee in the lounge and agree that this is a good time to discuss Rick. Here are some of the interview questions we might ask.

SHOW TRANSPARENCY 8

As we review the referral problem description, we decide that we want to ask some general questions first and then become more specific as the interview progresses.

Read the first question from Transparency 8.

One teacher replies that she only wishes Rick would complete his work. The other teacher considers each point and says that his adjustment in class is poor. He doesn't persist like the others do. She clarifies by stating that he loses his temper occasionally and refuses to do any work. He also wanders about the class when he should be doing seat work. As they each talk we take notes on what is reported.

Read the second question, part 1 (likes)

The teachers answer together that he likes TV. He talks about it frequently. When we probe further, one teacher says he likes social studies discussions. He talks a lot during that class period and usually makes a good contribution.

Read the second part of the question (dislikes)

Again they agree that he dislikes all written assignments, teasing from the other kids, and most of the vegetables served in the cafeteria.

A success that Rick had lately is reported by one teacher after some thought.

Point to the third question

He finished his map of the United States first among his social studies group last week. He beamed the rest of the day and was most cordial. The other teacher couldn't think of any recent successes.

In response to Question 4:

Point to question 4 on the transparency

Both teachers respond that he doesn't complete his written assignments and won't read aloud unless threatened. One teacher reiterates that she has observed many temper tantrums recently. You note that not completing work is addressed in question 5 and ask if there is anything else that Rick *does* which they believe he should not do. One teacher says he pouts and refuses to interact with her when she reprimands him. He isn't verbally or physically abusive, he just won't respond.

The fifth question is now rephrased.

Point to question 5 on the transparency

Is there anything else that Rick *doesn't* do which you wish he would do, in addition to not completing written assignments or reading aloud? They both shake their heads "no."

Now we are ready to choose one of the concerns and make it more specific. We decide to investigate temper tantrums, and ask, "Describe for me what Rick does when he has a tantrum." The teacher who mentioned tantrums as a concern describes Rick as throwing his pencil on the floor, then following that by throwing everything else on his desk. Then he usually crosses his arms and sits stiffly for as long as 5 to 10 minutes.

Now we come to question 6.

Point to question 6 on the transparency

The teacher's response is, "He has been doing it for about six weeks now."

Point to question 7 on the transparency

"He does it about three times a week. I really talk to him about it and he says he is sorry, but it just happens again."

Point to question 8 on the transparency

In response to question 8 she replies, "As I think about it, it's usually during the time he is supposed to be finishing the comprehension questions for stories they have read. He's done it a couple of times in math, but mostly it is associated with reading. I don't think he does it at any particular time or day of the week, but I'm not sure."

As we interview we try to get a thorough description of the concerns and the surrounding circumstances. We also ask a very critical question of each person we interview.

SHOW TRANSPARENCY 9—Read the question

We are eliciting not only descriptions but also the questions that each person has. What answers do they want from the assessment process? These questions will help form the basis for further assessment.

In the section on interview based assessment we cover the purposes of interviewing, the questions to be asked, the methods for developing assessment questions, and an approach to determining eligibility for special education on measurable aspects of definitions of handicaps.

In Rick's case, we would interview as many of his teachers as we could; we would also ask similar questions of his parents. Rick might be interviewed also but we would want to do other things with him first.

As we hear the descriptions of concerns we can begin to decide what we want to observe in the environments which are significant to the referral. In Rick's case, we might choose to observe him during reading and count his tantrums or refusals to do written assignments. Regardless of what we initially choose, it is imperative to observe.

We chose to observe Rick's in-seat behavior, his attention to his book or worksheets during reading seatwork. We also observed a boy in the class that the teacher said was no special problem to her. In that way we could estimate the norms for the class. In the observation based assessment component we deal with defining the behavior, selecting an appropriate measurement technique, depicting what we saw in the observation and making interpretations.

While observation based assessment is seemingly very simple, there are a number of complications that make accurate, reliable, and valid observations difficult. The component is designed to train a variety of personnel to make helpful observations.

Perhaps you are now curious about Rick's performance in reading which seems to be an important factor in the referral. We might administer a standardized reading test to Rick to find out how Rick is reading compared to those in his norm group. We could also observe his skills as he took the test.

Additionally, however, we want to know how Rick is performing in the reading curriculum to which he is assigned. If you look on page 6 of your worksheets you can see a description of how Rick read to us from an assigned reader. Curriculum based assessment emphasizes counting knowns, unknowns, and "hesitant" words as they are read. This information, as well as our observation of his performance, allows us to make more specific recommendations and better understand his behavior. You will see this page again in the curriculum based assessment component of this training package, and you will learn to interpret his performance from such data.

These three components make up the non-test-based assessment training package. Non-test-based assessment is defined as . . . .

SHOW TRANSPARENCY 10—Read the definition

Each component is organized into five basic parts. There [illegible] worksheets and resources for the participants and a trainer[illegible] guide, script, and transparency masters for the trainer. Each component can be thought of as presenting three levels of skills. Collecting data is the first level. Interpreting what is collected in the assessment is the second level. Training others in the skills is the third level of the package. On the diagram on page 7 of your worksheets you can see the entire package described. As you study the diagram, do you have any questions?

Pause for questions, then say . . .

Non-test-based assessment is designed to broaden the skills of practicing school psychologists, by allowing them to:

(1) discover the expectations of those concerned about a child,
(2) measure children's behavior precisely in relevant environments, and
(3) assess their skills embedded in the curricula to which they are assigned.

The purpose for doing any of these things is, of course, to increase the chances of more adequately serving children and the schools. This should be the goal of non-test-based assessment as presented in this training package.

TRANSPARENCIES FOR I&O

THE EVALUATION OF AN INDIVIDUAL USING TESTS, OBSERVATION AND OTHER PROCEDURES WHICH RESULT IN THE IDENTIFICATION OF BEHAVIORS OR OTHER CRITERIA TO DETERMINE THE PRESENCE OR ABSENCE OF A HANDICAP FOR PLACEMENT FOR SPECIAL SERVICES AND/OR THE SPECIFICATION OF STRENGTHS AND WEAKNESSES AND PRECISE SEQUENCES IN PROGRAMMING SERVICES FOR INTERVENTION.

IN SHORT, TWO PURPOSES:

1. IDENTIFICATION/PLACEMENT
2. INTERVENTION/PROGRAMMING

STUDENT RELATED VARIABLES

* STATUS OF VISION AND HEARING ACUITY
* ACCULTURATION COMPARABLE TO THE NORM GROUP USED
* ABSENCE OF SIGNIFICANT PHYSICAL HANDICAPS
* APPROPRIATELY MOTIVATED TO TAKE THE TEST
* COMPARABLY FAMILIAR WITH TEST TAKING
* FREE FROM SIGNIFICANT ANXIETY

EXAMINER RELATED VARIABLES

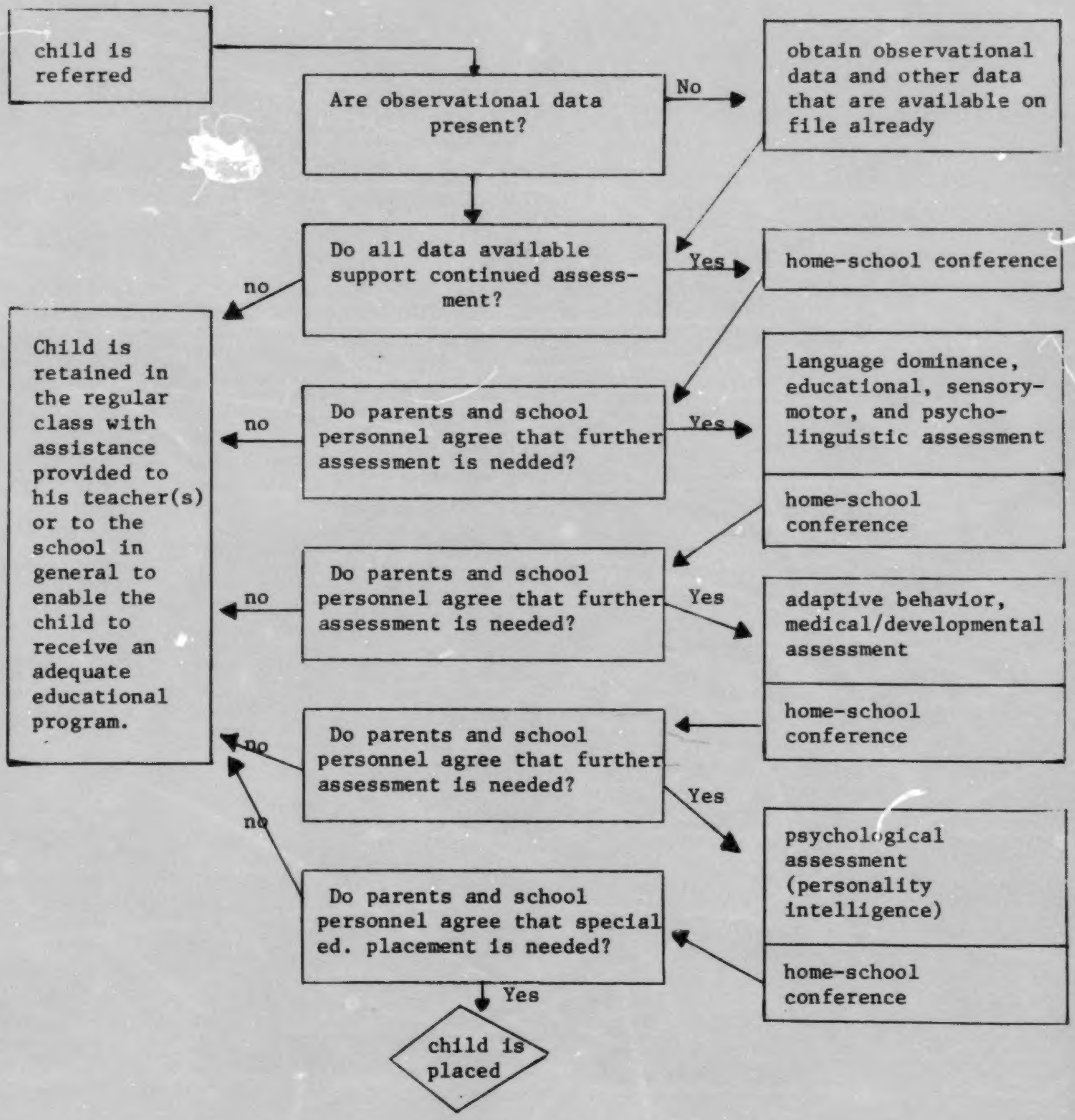
- EXAMINER PROPERLY TRAINED
- CAN ESTABLISH RAPPORT WITH STUDENT
- FLEXIBILITY IN MANAGING STUDENTS
- BASES INTERPRETATION ON ADEQUATE SAMPLE OF BEHAVIOR
- CONTROL POSSIBILITY TO INFLUENCE EXPECTATIONS
- INTERPRETATIONS ARE BASED ON PREMISE:

"PRESENT BEHAVIOR OBSERVED -- FUTURE BEHAVIOR INFERRED"

TESTING ENVIRONMENT RELATED VARIABLES

- FREE FROM DISTRACTION AND UNDUE NOISE
- FREE FROM INTERRUPTION
- COMFORTABLE SEATING AND WORKING SPACE
- PROPER LIGHTING, VENTILATION, ETC.
- MAXIMIZES STUDENT MOTIVATION

COMPREHENSIVE INDIVIDUAL ASSESSMENT FOR POSSIBLE MILDLY HANDICAPPING CONDITIONS


child is referred
Are observational data present?
No
obtain observational data and other data that are available on file already
Do all data available support continued assessment?
no
Yes
home-school conference
Child is retained in the regular class with assistance provided to his teacher(s) or to the school in general to enable the child to receive an adequate educational program.
Do parents and school personnel agree that further assessment is nedded?
no
Yes
language dominance, educational, sensory-motor, and psycholinguistic assessment
home-school conference
Do parents and school personnel agree that further assessment is needed?
no
Yes
adaptive behavior, medical/developmental assessment
home-school conference
Do parents and school personnel agree that further assessment is needed?
no
Yes
psychological assessment (personality intelligence)
no
Do parents and school personnel agree that special ed. placement is needed?
home-school conference
Yes
child is placed

Tucker, J. A., 1977

CRITICISM OF THE RELEVANCE OF TESTING

1. "YOU DIDN'T TELL ME ANYTHING I DIDN'T ALREADY KNOW"

   (EXPECTATIONS)

2. "IT DOESN'T APPLY TO MY PROBLEM OR SITUATION"

   (SITUATION-SPECIFIC BEHAVIOR)

3. "THERE IS NOTHING PRACTICAL THAT I CAN DO FROM WHAT YOU HAVE SAID"

   (IMPLICATIONS FOR INTERVENTION)

GRADE EQUIVALENT SCORES OBTAINED BY MATCHING SPECIFIC READING TEXT WORDS TO STANDARDIZED READING TEST WORDS

CURRICULUM	PIAT	WD KNL	MAT WD ANAL	SORT	WRAT
Bank Street Rdg Ser.					
Grade 1	1.5	1.0	1.1	1.8	2.0
Grade 2	2.8	2.5	1.2	2.9	2.7
Keys to Rdg					
Grade 1	2.0	1.4	1.2	2.2	2.2
Grade 2	3.3	1.9	1.0	3.0	3.0
Reading 360					
Grade 1	1.5	1.0	1.0	1.4	1.7
Grade 2	2.2	2.1	1.0	2.7	2.3
SRA Rdg Prog.					
Grade 1	1.5	1.2	1.3	1.0	2.1
Grade 2	3.1	2.5	1.4	2.9	3.5
Sullivan Assoc.					
Grade 1	1.8	1.4	1.2	1.1	2.0
Grade 2	2.2	2.4	1.1	2.5	2.5

Jenkins & Panny, Exceptional Children, March, 1978.

SAMPLE REFERRAL INTERVIEW QUESTIONS

1. IN YOUR JUDGMENT, IS THERE ANYTHING IN THE CHILD'S APPEARANCE OR BEHAVIOR TO RAISE CONCERNS (VISION, HEARING, DEVELOPMENT, ADJUSTMENT, OTHER PROBLEMS)?
2. WHAT DOES THE CHILD LIKE? DISLIKE?
3. DESCRIBE A SUCCESS S/HE HAD RECENTLY?
4. WHAT DOES THE CHILD DO THAT YOU BELIEVE S/HE SHOULD NOT DO?
5. WHAT DOESN'T THE CHILD DO WHICH YOU BELIEVE S/HE SHOULD DO?
6. HOW LONG HAVE YOU BEEN AWARE OF THIS BEHAVIOR?
7. HOW OFTEN DOES THE BEHAVIOR OCCUR?
8. UNDER WHAT CONDITIONS HAVE YOU NOTICED THIS BEHAVIOR?
9. WHAT HAVE YOU TRIED TO DO AS THE RESULT OF THE BEHAVIOR?

ETC.

WHAT QUESTIONS SHOULD BE ANSWERED DURING THE ASSESSMENT PROCESS?

NON TEST-BASED ASSESSMENT

THE USE OF PROCEDURES OR OTHER METHODS TO BROADEN THE DESCRIPTION OF A STUDENT BEYOND HIS OR HER PERFORMANCE ON STANDARDIZED TESTS.

MINIMUM COMPONENTS

1. INTERVIEW-BASED ASSESSMENT
2. OBSERVATION-BASED ASSESSMENT
3. CURRICULUM-BASED ASSESSMENT

REVIEW: FUNCTIONAL DEFINITION OF PSYCHOLOGICAL ASSESSMENT*

The evaluation of an individual using tests, observation and other procedures which result in the identification of behaviors or other criteria to determine the presence or absence of a handicap for placement for special services and/or the specification of strengths and weaknesses and precise sequences in programming services for intervention.

In short, psychological assessment has at least two purposes:

1. identification/placement
2. intervention/programming

* References:

Coulter, W.A. & Morrow, H. W. A handbook on least-biased assessment. (prepared for the State Department of Education in Indiana, 1977).

Coulter, W.A. & Morrow, H.W. What is psychological assessment. Texas Psychologist, 1978, 30, 14-17.

Salvia, J. & Ysseldyke, J. Assessment in special and remedial education. Boston: Houghton-Mifflin, 1978.

Sources of Error in Testing That Could Influence Interpretation

Many factors can be sources of error when objective testing instruments are used. If unrecognized by the appraisal professional, these errors could result in an inaccurate interpretation of test results. Consider the variables within the categories below (without regard to ethnicity or socioeconomic status of the student being tested) which could result in inaccurate interpretation.

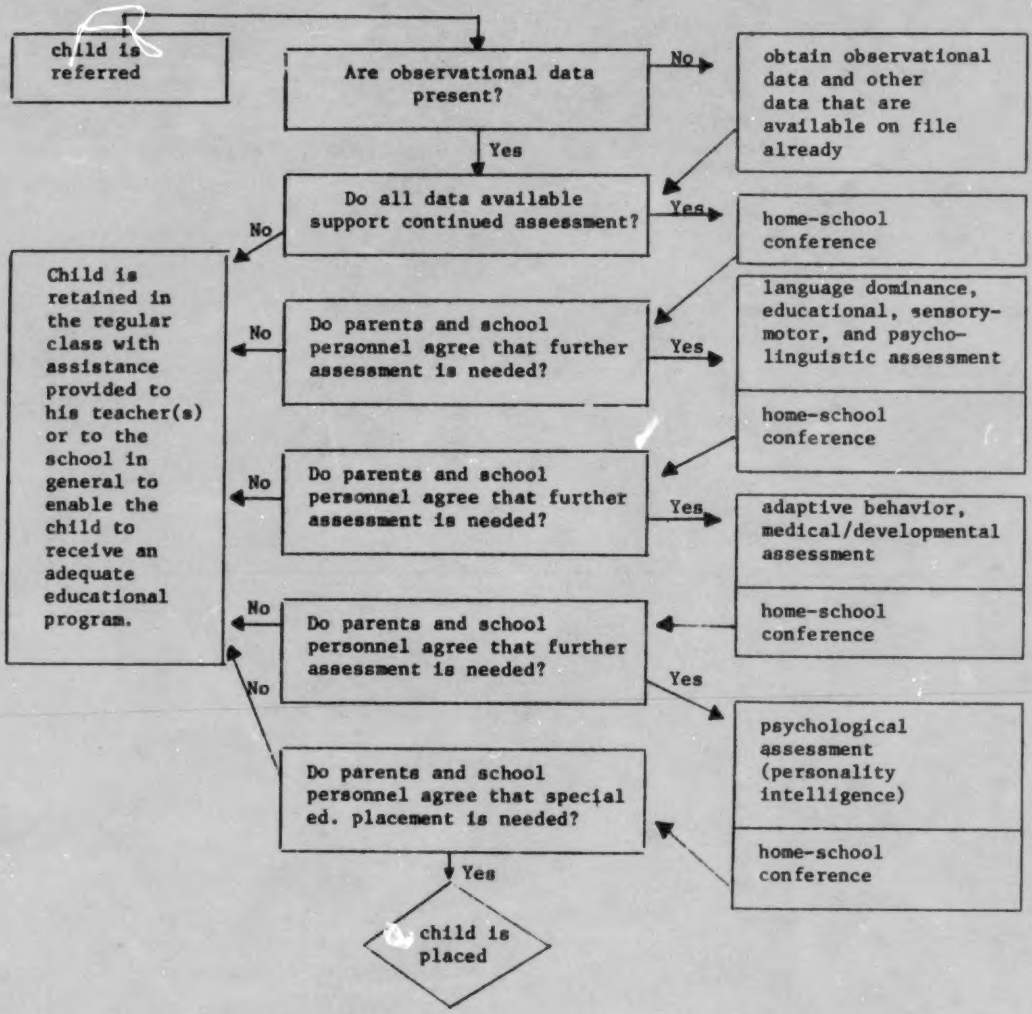
Student-related variables:

Examiner-related variables:

Testing environment-related variables:

COMPREHENSIVE INDIVIDUAL ASSESSMENT

For Possible Mildly Handicapping Conditions


child is referred
Are observational data present?
No
obtain observational data and other data that are available on file already
Yes
Do all data available support continued assessment?
Yes
home-school conference
No
Child is retained in the regular class with assistance provided to his teacher(s) or to the school in general to enable the child to receive an adequate educational program.
No
Do parents and school personnel agree that further assessment is needed?
Yes
language dominance, educational, sensory-motor, and psycholinguistic assessment
home-school conference
No
Do parents and school personnel agree that further assessment is needed?
Yes
adaptive behavior, medical/developmental assessment
home-school conference
No
Do parents and school personnel agree that further assessment is needed?
Yes
No
psychological assessment (personality intelligence)
Do parents and school personnel agree that special ed. placement is needed?
home-school conference
Yes
child is placed

Tucker, J.A., 1977

GRADE EQUIVALENT SCORES OBTAINED BY MATCHING SPECIFIC READING TEXT WORDS TO STANDARDIZED READING TEST WORDS

Curriculum	PIAT	MAT WD KNL	 WD ANAL	SORT	WRAT
Bank Street Rdg Ser.					
Grade 1	1.5	1.0	1.1	1.8	2.0
Grade 2	2.8	2.5	1.2	2.9	2.7
Keys to Rdg					
Grade 1	2.0	1.4	1.2	2.2	2.2
Grade 2	3.3	1.9	1.0	3.0	3.0
Reading 360					
Grade 1	1.5	1.0	1.0	1.4	1.7
Grade 2	2.2	2.1	1.0	2.7	2.3
SRA Rdg Prog.					
Grade 1	1.5	1.2	1.3	1.0	2.1
Grade 2	3.1	2.5	1.4	2.9	3.5
Sullivan Assoc.					
Grade 1	1.8	1.4	1.2	1.1	2.0
Grade 2	2.2	2.4	1.1	2.5	2.5

Jenkins & Pany, Exceptional Children, March, 1978

REFERRAL FOR EDUCATIONAL/BEHAVIORAL EVALUATION

NAME Rick DATE OF BIRTH 9-3-71

SEX Male SCHOOL * * * Elementary

GRADE 3 TEACHER Ms. Lewis

REASON FOR REFERRAL Rick is not performing grade level work in spelling and reading. He is starting to have temper outbursts in class refusing to work and he wanders around the classroom.

DESCRIBE SPECIFIC EDUCATIONAL/BEHAVIORAL PROBLEMS: Rick within the last month is having pouting episodes, refusing verbally and physically to complete his assignments even in small groups and one to one with the teacher aide. Other students read for him to help him finish his work.

LIST STRATEGIES USED TO ENHANCE STUDENT ACHIEVEMENT AND/OR CLASSROOM BEHAVIOR:

1) Given him additional time to complete assignments 2) Praised him when he tries. 3) Since October he has attended twice a week a "right to read" remedial class.

CURRENT EDUCATIONAL FUNCTIONING: Below grade level and his potential is much higher than his present performance in both reading and spelling.

RESULTS OF GENERAL VISION, HEARING, AND MEDICAL SCREENING:

Vision and hearing screening normal.

PLEASE SIGN:

Linda Lewis, REFERRING TEACHER(S)

, PRINCIPAL

S. Keith, COORDINATOR OF SCREENING COMMITTEE

DATE OF REFERRAL: 12-3-79

I&O/W5

RICK

8.3 YEARS OLD

IN THIRD GRADE, RECOMMENDED FOR DIAGOSTIC EVALUATION

CURRICULUM

ASSESSMENT

THE RED **TRUCK

"THERE IS A FOREST FAR UP IN THE **MOUNTAINS. IT IS *CALLED BIG **PINES. **THERE IS A *LITTLE **STORE **THERE. **THERE IS A **RANGER *STATION **THERE *TOO. IT IS *CALLED BIG **PINES **RANGER *STATION.

** UNKNOWNS

* HESITANTS

KNOWNS

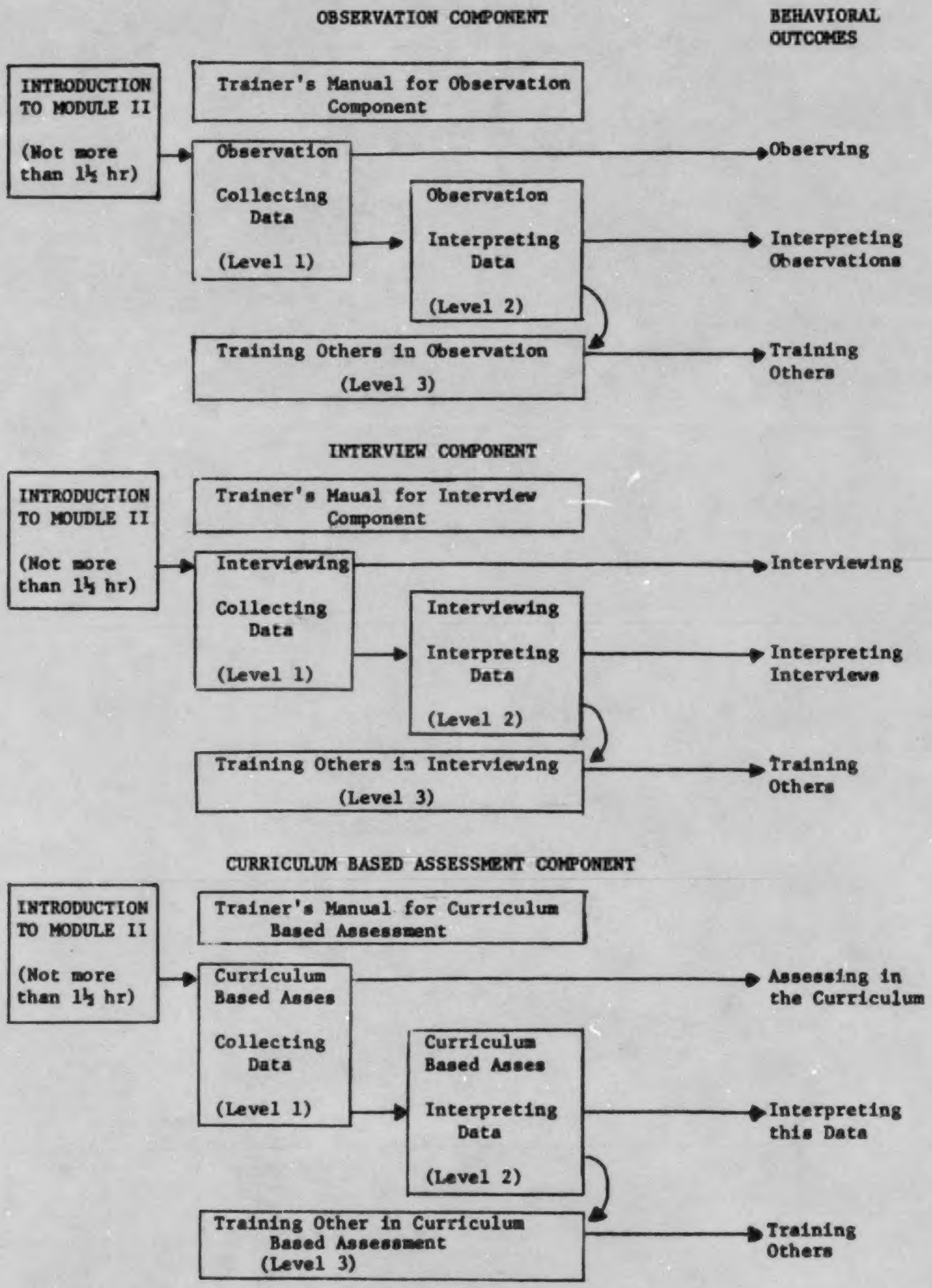
A
BIG
FAR
FOREST
IN
IS
IT
RED
THE
UP

CHALLENGES

CALLED
LITTLE
MOUNTAINS
PINES
RANGER
STATION
STORE
THERE
TOO
TRUCK

(First paragraph of Jim Forest and the Bandits, 1967).

MODULE II SCHEMATIC FOR TRAINING PROCESS


OBSERVATION COMPONENT
BEHAVIORAL OUTCOMES
INTRODUCTION TO MODULE II (Not more than 1½ hr)
Trainer's Manual for Observation Component
Observation Collecting Data (Level 1)
Observing
Observation Interpreting Data (Level 2)
Interpreting Observations
Training Others in Observation (Level 3)
Training Others
INTERVIEW COMPONENT
INTRODUCTION TO MOUDLE II (Not more than 1½ hr)
Trainer's Maual for Interview Component
Interviewing Collecting Data (Level 1)
Interviewing
Interviewing Interpreting Data (Level 2)
Interpreting Interviews
Training Others in Interviewing (Level 3)
Training Others
CURRICULUM BASED ASSESSMENT COMPONENT
INTRODUCTION TO MODULE II (Not more than 1½ hr)
Trainer's Manual for Curriculum Based Assessment
Curriculum Based Asses Collecting Data (Level 1)
Assessing in the Curriculum
Curriculum Based Asses Interpreting Data (Level 2)
Interpreting this Data
Training Other in Curriculum Based Assessment (Level 3)
Training Others

RESOURCE GUIDE FOR I&O

RESOURCE MATERIAL

ASSUMPTIONS REGARDING TESTING AND ITS INTERPRETATION

I. *T. Ernest Newland* (1973)

The person administering the test is properly trained to do so.

Any test only samples behavior to some statistically satisfactory degree of adequacy. We assume that the sampling is adequate in amount and that the sampling is representative of area.

The students on which tests of learning aptitude are used have had exposure to comparable, but not identical, acculturation.

Measurement error will be present in any measurement.

Only present test behavior is observed in the sampling process.

Future behavior is inferred—any such inference or inferences presumably based upon observed behaviors. A sharp distinction is drawn between what is observed and what is inferred.

The school examiner or the school psychologist her/himself is the crucial variable. It is s/he who decides what test to use, knows its appropriateness to the situation at hand, and is obligated to help the user of the information produced in a psychoeducationally sound manner. A test just lies on the shelf; it is a person who decides whether it is relevant to the task at hand. Disturbingly often, attempts have been made equivalent to measuring engine compression by means of a tire pressure gauge.

II. *Jane Mercer* (1977)

If two persons have had equal exposure to opportunities to learn the materials in a test, and

If they have been equally motivated and reinforced for learning the materials in a test, and

If they are equally familiar with tests and test-taking situations, and

If they are free of anxieties, fear, or emotional disturbance which might interfere with learning or with test performance, and

If they are free of physical, sensory, or motor disabilities which might interfere with learning or with test performance,

Then significant differences in their test performance may be interpreted as reflecting differences in their learning potential, i.e., their mental ability.

DO YOU HAVE ANY ADDITIONAL ASSUMPTIONS REGARDING TESTING IN GENERAL?

REFERENCES AND ANNOTATED BIBLIOGRAPHY

The following selections represent an introduction to the context of non-test-based assessment. While this collection may appear arbitrary in some choices, we found these references particularly helpful in developing the concept for the package. Additional references will be presented in the Resource sections of the three modules.

Arter, J. A. & Jenkins, J. R. Differential diagnosis—prescriptive teaching: A critical appraisal. *Review of Educational Research*, 1979, 49, 517-555.

The frequent practice of analyzing standardized test data to compile instructional prescriptions is critically examined in terms of the existing research. The authors note a number of assumptions on which this practice is based and conclude that "children do not appear to profit from current applications of Differential Diagnosis—Prescriptive Teaching." (p. 517)

Deno, S. L. & Mirkin, P. K. Data-based IEP development: An approach to substantive compliance. *Institute for Research on Learning Disabilities Monograph*, No. 13. Minneapolis: University of Minnesota, 1979.

Deno, S. L., Mirkin, P. K., Ghiang, B., & Lowry, L. Relationships among simple measures of reading and performance on standardized achievement tests. *Institute for Research on Learning Disabilities Monograph*, No. 20. Minneapolis: University of Minnesota, 1980.

Deno, S. L., Mirkin, P. K., Lowry, L., & Kuehnle, K. Relationships among simple measures of spelling and performance on standardized achievement tests. *Institute for Research on Learning Disabilities Monograph*, No. 21. Minneapolis: University of Minnesota, 1980.

Deno, S. L., Mirkin, P. K., & Marston, D. Relationships among simple measures of written expression and performance on standardized achievement tests. *Institute for Research on Learning Disabilities Monograph*, No. 22. Minneapolis: University of Minnesota, 1980.

These four reports detail an approach to evaluating student progress which is quick, reliable and can directly measure the content of the curricula. They are excellent resources for program evaluation.

Jenkins, J. R. & Pany, D. Standardized achievement tests: How useful for special education? *Exceptional Children*, 1978, 44, 448-453.

This article, discussed in the overview, presents a cogent case for examining test content comparability with the content of curricula taught in schools. The amount of overlap between the two does not yield a helpful match for making reliable instructional recommendations.

Mischel, W. *Personality and assessment*. New York: John Wiley, 1968.

The assessment of personality is one of the most vague areas of research yet it is widely used in psychological practice. Mischel examines the evidence and assumptions regarding personality assessment and makes some surprisingly practical, and still up-to-date, recommendations.

Salvia, J. & Ysseldyke, J. *Assessment in special and remedial education, Revised Edition*. Boston: Houghton-Mifflin, 1981.

This is an excellent introductory text to psychological assessment as practiced in the pubic schools. Critical reviews of many commonly used tests are provided. Of special importance to non-test-based assessment are the chapter on assumptions and the chapter on interpretation.

Tucker, J. Operationalizing the diagnostic intervention process. In Oakland, T. (Ed.) *Psychological and educational assessment of minority children*. New York: Brunner/Mazel, 1977.

This chapter describes the assessment process and makes recommendations regarding a minimal comprehensive assessment. Special attention is given to aspects of nondiscriminatory assessment.

OBSERVATION BASED ASSESSMENT (OBA)

By R. Vance Hall & Marilyn Hall

USER'S GUIDE FOR OBA

USAGE SUMMARY

Rationale

The Observation-Based Assessment component is one of three non-test-based data collection procedures presented in the Non-Test-Based Assessment Package. Classroom observation skills can be used by a person not formally trained in assessment procedures. Therefore, a school psychologist can train a classroom teacher, who is working with the child to be assessed, to:

1. properly define the behavior to be observed,
2. measure and record classroom behavior, and
3. intervene and evaluate the outcomes.

User

This workshop is designed primarily for school psychologists and through them other assessment personnel, teachers, teacher aides, or volunteers. Its intention is to teach the user how to define, measure, record, interpret, and evaluate observational data. The observation results can be used as one part of an educational/behavioral evaluation for determining appropriate curricular and behavioral interventions.

This component can be presented either before, between, or after the other two components. They are not designed to be sequential. It can also be used independently (i.e., without reference to the other two components in the package). But when it is used either independently or prior to the other two, it should be preceded by the special Introduction and Overview component that is designed to prepare the user for all three of the components.

Directions to Presenter

Although a script is presented, presenters should be familiar enough with the component content so that this script is not "read" to the participants. The session will be far more interesting if the presenters make the workshop their own, modifying the script and examples to suit their individual styles.

If the workshop needs to be shortened, presenters should consider shortening the scripted presentation sections and placing greater emphasis on audience participation, modeling material and techniques and behavioral rehearsal activities designed for each section.

OBSERVATION BASED ASSESSMENT WORKSHOP OBJECTIVES

Upon completion of this Observation-Based Assessment workshop, participants will be able to:

1. Identify the general purpose for observation of students and others in a variety of settings.
2. Respond correctly to questions regarding defining, measuring, selecting appropriate observation procedures, recording behavior and interpreting observation results.
3. Write a four part operational definition of the behavior to be observed including answers to the questions, Who?, What?, When?, and Where?
4. Recognize and select appropriate observational procedures for given referral and observational needs.
5. Record and chart behavior using reliability checks and appropriate measurement procedures.
6. Interpret observational results relevant to assessment and intervention goals.

To meet these objectives, the learner will:

—complete the worksheets for the Observation Based Assessment workshop.

—participate in the simulation activities:

Activity 1.	To provide practice in defining behavior
Activity 2.	To provide practice in collecting data and measuring observable behaviors.
Activity 3.	To provide practice in selecting appropriate measurement procedures and recording techniques.

—meet 90% criterion on written instant replays concerning information and application of the workshop's content.

CONTENT OUTLINE

I. OVERVIEW
  - A. General Purpose of Observation-Based Assessment.
  - B. Major Components of Learning Observation Skills (Form Step Model)
    1. Defining behavior
    2. Measuring and recording behavior
    3. Interpreting observation data
    4. Evaluating observation data
  - C. Some General Advantages and Limitations of Observational Data.
  - D. General Introduction of Skills to be Presented (Overview of Workshop Sections)

II. INTRODUCTION TO OBSERVATION AND MEASUREMENT
  - A. Defining Behavior
    1. Who?
    2. What?
    3. When?
    4. Where?
    5. Reliability checks for definitions.
  - B. Collecting Data and Measuring Behavior
    1. Anecdotal records.
    2. Direct measurement of permanent products.
    3. Frequency counting or event recording.
    4. Duration.
    5. Interval recording.
    6. Time sampling.
    7. Reliability checks.

III. INTERPRETING OBSERVATION DATA
  - A. Charting Behavior.
    1. Establishing baselines.
      - a. ascending.
      - b. descending.
      - c. stable.
    2. Assessment of intervention procedures.
      - a. AB designs.
      - b. ABAB designs
      - c. ABC designs.
      - d. Multiple baseline designs.
  - B. Obtaining Comparative Data.
    1. Establishing minimum objectives.
    2. Observation of peers.
    3. Observing teacher behavior.

IV. TRAINING OTHERS IN OBSERVATION
  A. Suggestions for Introducing Basic Measurement Procedures in Workshops.
  B. Obtaining Observational Data.
    1. Helping teachers select a measurement procedure.
    2. Obtaining reliability checks.
  C. Using the Results.
    1. Direct intervention.
    2. Assessment of progress

V. SUMMARY

WORKSHOP LESSON PLAN

Materials

1. Worksheets and Instant Replays for each participant.
2. Transparencies and Grease Pencil(s).
3. Overhead Projector and Screen.

Sequence of Events

	Time Estimate (in minutes)
1. Welcome and Introduction	5-10
2. Presentation: Module Objectives and Overview of Observational Skills	5-10
3. Presentation: Introduction to Observation and Measurement	20
Activity 1: Practice in defining behavior	25
Instant Replay (optional)	15
4. Presentation: Collecting Data and Measuring Behavior	40
Activity 2: Practice in collecting data and measuring behavior	45
Instant Replay (optional)	15
5. Presentation: Selecting Appropriate Measurement Procedures and Recording Techniques	40
Activity 3: Practice in selecting appropriate measurement procedures and recording techniques	45
Instant Replay (optional)	15
6. Presentation: Training Others in Observation Skills	30
7. Closing Discussion and Questions	15

REFERENCES

Hall, R. V. *Managing behavior series* (Nos. 1, 2, 3). Lawrence, KS: H & H Enterprises, 1974.

Hall, M. *Responsive parenting*. Lawrence, KS: H & H Enterprises, 1978.

SCRIPT FOR OBA

PRESENTATION: COMPONENT OBJECTIVES AND OVERVIEW OF OBSERVATIONAL SKILLS

During this workshop we will cover observational skills for use in the classroom and in other settings. You will receive background information on how to define and measure behavior, how to chart and record results, and how to select appropriate observation techniques for specific behaviors.

The session will last approximately ________________.

General information will be presented; you will participate in activities designed to help you apply the information; and written instant replay activities at the end of each section will help you be sure you are receiving the information needed to use observation skills. If at any time you have questions or concerns, please feel free to raise them for discussion.

SHOW TRANSPARENCY 1 (T-1)

Go over the transparency with the participants point by point.

These objectives are designed to provide a background for the "Basics" in observation skills, and to help you apply those skills or train others (such as teachers or aides) to apply them.

Are there any questions about the purpose or general content of the workshop?

Answer Questions
Hand out participant's materials

PRESENTATION: INTRODUCTION TO OBSERVATION AND MEASUREMENT

This section of the presentation can be adapted by each trainer to present his/her own experiences and examples. The introduction provided below features one given by R. Vance Hall and Marilyn Hall, the primary content developers of this workshop.

We will start our workshop with a short discussion of the practical applications of observation skills.

The following experience is related by Vance Hall, one of the primary content developers of this workshop:

"When I was a teacher, there were many times when I couldn't help kids. Then when I became a principal, the parents and teachers came to me for help, and again I was frustrated because I was often unable to tell them specific things they could do to help the kids. One of my second grade teachers had a boy in her room named Mike. Mike had learning problems and was very disruptive in her classroom, so the teacher referred Mike to me. I did all the things that principals usually did. I looked at the permanent record and found that he had been tested and retested and that he had had problems since kindergarten; I made the usual suggestions; I even visited the teacher and Mike in the classroom and talked with the teacher afterwards. Several weeks later I asked the teacher, "Is Mike doing any better?" She said she didn't see much change.

So we called in the school psychologist. He tested Mike again and looked into his medical history. After he finished his assessment we had a staff meeting which included the teacher, the school nurse, and others. We talked about the school psychologist's report.

As I remember it, the psychologist reported that the boy had a number of behavioral problems and learning problems and suggested a number of reasons why this might be. There was some evidence that because of convulsions after an illness there might be some "brain dysfunction," which is what we called it at that time. Mike came from a divided home. It was suggested that he might be blaming his mother for the breakup in the home and be projecting his feelings toward his mother to the teacher. There was also sibling rivalry. He had an older sister who was doing very well in school. There were a number of such conditions which might be contributing to his problems in school. The school psychologist reported that the teacher was doing a good job, trying to teach Mike at the appropriate level. Finally the psychologist reported that Mike needed a lot of attention and support.

At the end of the conference, the teacher said to me, "You know, I really appreciate what you've done." And to the psychologist she said, "And I really appreciate what you have done, but you haven't told me anything I didn't already know. I'm afraid what you have told me doesn't give me anything specific I can do to help Mike."

And I realized when she said that, that it was true—that even though sometimes we do help, very often we simply repeat back to the teachers what they already know. As a result of this and other similar experiences, I was even more frustrated.

So when I decided to go back to the University of Washington, I decided to take all the psychology courses I could get. I really wanted to learn more about behavior and ways to help kids. I learned different personality theories. I learned different ways of looking at behavior. I learned about testing. But these courses still didn't give me specific things that could help teachers and parents with the problems of their kids.

At the time, I was principal of a school for brain-injured and retarded kids—that is what they were labeled then—at the University of Washington. Manyof the kids in the school also had been labeled autistic. Many of them had been there a long time (two to four years) and their records indicated very little change during that time.

Finally, at the end of my program, I needed three more credits in psychology to complete my minor. I happened to take a course because it came at the right time of day, and it counted for three credit hours. It was there that I learned about a different approach to behavior. Behavioral approaches were just coming in then. The course emphasized precise observation and measurement. This approach gave me the opportunity to deal with behavior more directly and to use more specific procedures than we had used in the past.

So, I began working with teachers and parents to see if this new approach would work with the special kids we had in our school. It worked. We were able to make changes in behavior in a matter of days and weeks that we had not been able to accomplish in months and years before. I had found some things that really worked.

In the following example, Vance Hall describes a specific case in which observation techniques were used to intervene in a regular classroom situation with a third grade boy who had marginal to poor in-class study skills. This example may be used with the accompanying transparency (T-2) to introduce Defining Specific Behaviors to be Observed. Trainers, however, are also encouraged to develop their own illustrative cases if this will enhance their presentation or be more relevant to the participant's needs.

At first we were told it couldn't work in the regular classroom, but one principal saw what we were doing, and said, "I don't care what they say downtown, I'll arrange for you to come and work in our school, because you've really helped some of these kids."

I met with him and his teachers. I told them there might be some procedures we had that would work in a regular classroom. One teacher, Natalie Barge, who was a good teacher, said, "Yes, you can come into my class. I have some kids that aren't learning very well." That wasn't surprising because at that time she had 43 third graders from a low socio-economic area in her class with no teacher aide.

Natalie pointed out one boy whose name was Robbie. She reported that Robbie was very disruptive and said, "If you can help Robbie, you can do something with any kid."

The first thing we did, of course, was to go into the classroom and observe. Ms. Barge said he *never* studied. We observed Robbie and recorded his study behavior. Every 10 seconds an observer recorded whether or not Robbie was studying.

We discovered that he was studying part of the time; he wasn't studying very much, but 28% of the time he was studying.

The rest of the time he was doing all kinds of inappropriate things like punching holes in a milk carton, sliding the carton over his desk, throwing wads of paper and other small objects at students seated nearby. Without going into great detail, I'll just mention that after the seventh day when we had obtained what is called a "Baseline" on Robbie's study behavior, we realized that observing just Robbie's behavior was not sufficient. At that point we began recording the teacher's behavior also, and we found out that the teacher only paid attention to him when he was doing these wild things. She would scold him, tell him to do his work, and so on. It seemed to us that she was reinforcing his inappropriate behavior. So we asked her to ignore his inappropriate behavior and attend to him systematically when he was engaged in appropriate behavior.

You can guess what happened to his study behavior. During the "reversal stage" we got her to quit the intervention procedure and go back to scolding him and getting after him. Of course, then his study behavior decreased again.

Then we reinstituted the attending to him when he was working—his study behavior went up again. By the end of the semester, for the very first time, Robbie got something besides a "D" or an "F" on his report card. He got a "C" in spelling and a "B" in math. For the first time since he entered school he got an "S" (satisfactory) in citizenship. He'd always gotten "U" before. The approach seemed to make a real difference for Robbie.

We replicated this particular study in a number of schools. I think this was the first study which used these systematic procedures in a regular classroom. It is considered a classic study and has been cited over 400 times in the literature. It is the Hall and Jackson study, for those of you who have seen it in psychology books or textbooks.

That gave us our start. We soon had a reputation, and other teachers began asking us to come into their classrooms. We carried out studies at the secondary level also, and found that some of the procedures worked there as well.

SHOW TRANSPARENCY 2 (T-2)

Now if you will turn to your handout, we are going to look at some of the basics. On page one of your handout is an outline. We are going to go through that outline with the help of several transparencies.

Incidentally, copy for the transparencies is available so that if you ever want to give an inservice workshop in your district, you can obtain a set of presentation materials and activities to choose from in making up your own workshop.

We're going to talk about the measurement of behavior. But we are only talking about behaviors that are observable and measurable. Remember those two points.

The first thing we do if we have a behavior problem is to define, or get a description of, the behavior that we are concerned about. We want to pinpoint that behavior, which we call the *target behavior*. We encourage teachers and parents that we work with, *not* to use nonspecific terms like anxiety, hostility, and aggression, but to translate those things into behavioral terms so that we can learn what they mean. What are they really talking about? Why do they think that a child is aggressive or hostile? What are the behaviors that can be pinpointed? We teach them to define those behaviors so they can tell us exactly what it is that they are concerned about.

(Point to transparency T-2) A Good Definition of Behavior Answers These Four Questions:

1. Who?
2. What?
3. When?
4. Where?

In the case of Robbie—the case we discussed a while ago—the "Who" is Robbie, a third-grade boy in Natalie Barge's class.

In terms of the "What" question, you remember that the teacher reported that Robbie did not study. We called it study behavior then, but these days we would be more likely to call it attending behavior. You also remember that we pinpointed the behavior exactly, so that we knew *what* we meant by study behavior. With Robbie, it was an orientation toward assigned course material, primarily reading and math. Since we observed him mostly during math period, we focused on the math materials. We defined study behaviors as looking at the teacher when she was lecturing, looking at another classmate when the classmate was answering a question in class, or responding to the teacher's request—"Robbie, will you bring your paper to me?"

So far we know "Who?" and "What?".

Even though Natalie carried out the assigned procedures throughout the whole day, our observer was only there during 30-minute observation sessions during the math period from 9:00-9:30 in the morning. So, "During the first 30 minutes of math class" tells us "When?".

"Where?" was a third-grade classroom taught by Natalie Barge. So a good definition tells you those things: Who, What, When, and Where. Don't forget it. Are there any questions at this point about defining behaviors to be observed?

ANSWER QUESTIONS

Ask participants to look at 1.B. of the handout

At this point in our agenda, we have finished defining and pinpointing, and we are ready for another specific case—Sim Houston. This is a story about a fifth-grade fellow who was having some trouble, and we will work through his case using the information we have learned so far.

There may be many reasons why Sim is all hung up on his aches and pains, but what is really going on is that the boy is in the fifth grade and he's missing a lot because he's not in school. At least initially, the teacher probably can't do much about that. It would involve working with the parents and teaching them. Hopefully that will happen, but the teacher, the school psychologist, or whoever, is concerned with the fact that this fifth-grade boy complains regularly, day in and day out, about his aches and pains.

Looking for a behavioral definition, we have to answer the four simple questions:

Who?	Sim Houston.
What?	Complains, and this is sort of extra but "about his aches and pains". That's what he complains about, and that's the only thing that the teacher would be recording. She will not record his complaining about the work being too hard, or someone kicking him, or any other behavior. Sim Houston complains about his aches and pains.
When?	During the school day.
Where?	In the fifth-grade classroom.

As you are working with teachers and parents, have them talk about what they are concerned about. Then you focus in on the simple who, what, when, and where questions. When you finish you have a behavioral definition and one that you can actually observe and measure. And, of course, measuring the defined behavior is the next step.

Do you have any questions about our definition of Sim Houston's behavior?

Next have the workshop participants do 1.C. in the handout and then 1.D., which is the first participant activity. In doing 1.C., participants are to describe a problem behavior they have encountered in a classroom situation, either their own classroom or classrooms they have observed or worked in. This activity can be done individually by each person working on their own definition for five to ten minutes, OR you can break the participants into small groups of two, three, or four persons each. Have them develop a definition using the four "W" questions. If done individually, have the participants share their definitions, but if done in groups, have one person from each group present the definition developed by their respective groups. Give positive supportive feedback regarding their accurate use of the four part definition.

At this point we are going to do some practice exercises in defining and pinpointing behavior. First, we are going to do a brief exercise on developing a definition of an observable and measurable behavior. After we finish with that and discuss the outcomes, we will practice observing a specific behavior. Let's take five minutes or so and think of a typical complaint that you might get from a teacher about a common behavior that occurs frequently in the classroom. Think of one that you have experienced, or make one up and then come up with the behavioral definition.

Allow 5-10 minutes for the participants to work individually or in small groups, then discuss their answers by giving feedback on how accurately the four "W" questions were addressed. Ask whether there are any questions.

Next do Activity 1: Practice in Defining Behavior.

Do Activity 1

ACTIVITY 1

NOW YOU SEE IT AND NOW YOU DON'T

Handraising: A Demonstration
in Behavior Definition

Purpose: To provide practice in defining behavior according to a specific set of agreed-to criteria.

Time: 20 minutes:	Introduction	5 minutes
	Activity	10 minutes
	Analysis	5 minutes

Group Size: Limited only by the trainer's ability to manage the group's attention.

Group Structure: Almost any group arrangement is acceptable so long as the trainer is visible to all participants.

Physical Setting: The room in which the workshop is conducted is usually acceptable. It is essential that every participant be able to see the trainer clearly.

Materials: Chalkboard and chalk or butcher paper or newsprint with marking pen.

Overview: The participants are asked the number of handraising behaviors of the trainer in a 45 second observation period. The trainer then asks for frequencies from the group at large. Following the realization that there is variance in scores, the trainer assists the group in developing a more precise definition. The handraising observation session is repeated for 45 seconds. The trainer again elicits frequency counts from the group. The point can be made that no matter how simple the label of a behavior there is still a necessity for a precise definition.

Process:

1. *Announce to the Group:* Now I want you to practice a simple behavior observation. The behavior is handraising.
2. *Appoint someone to be a timekeeper or keep time yourself. Say:* Count the number of times I raise my hand for the next 45 seconds. Ready? Go.

   Look at your watch or cue the timekeeper.
3. You should begin raising your dominant hand over your head. Do it at least 5 times. Then raise your opposite hand over your head at least 3 times. Then raise both hands. Drop them. Then raise your dominant hand only to your shoulder 4 times. Next raise your opposite hand to your shoulder 2 times. Finally, raise your dominant hand to about eye level 3 times.
4. At the end of the 45 second observation period, ask the timekeeper (or do it yourself) to record the frequency count. First say: Someone give me your answer. How many handraisings did you count?

   Record their answer on the chalkboard or paper. Next ask:

   Who got something different?

   Record the answer, and then ask: Did anyone get something different from either of these?

   Continue to ask for different responses and record them. If the audience is larger than 12-15 participants, conclude the recording by asking, "Who got less than 5?," "Who counted between 5-8, 9 or 10, 11 or 12, 13-15, more than 15?"

   Count and record all responses. Save the answers for the "Analysis" section of this activity.
5. Ask the group if the handraising behavior they just observed conformed to the standards of who, what, when,

and where. The answer is obviously "no". Next, using the chalkboard or newsprint, write:

Handraising—

Who?

What?

When?

Where?

Now tell the participants you are going to define "handraising" for them according to the 4 "W" questions. Tell them also that when you have done that you will give them another opportunity to observe the same behavior sequence as before, this time counting "handraising" behavior according to the behavior definition you have given them.

Write the following on the chalkboard, using the outline that you have just placed there, reviewing the essential parts of a behavior definition as you go.

Handraising—

Who?	Your name, workshop trainer
What?	Handraising-Raising the right hand over the head above the ear-line.
When?	During Activity 1 for 45 seconds.
Where?	Workshop presentation room

6. Ask the group to be ready to observe you again as you do the same handraising behaviors. Tell them:

   Count the number of times I raise my hand for the next 45 seconds. Be sure to use the behavior definition of "handraising" we have developed. Ready? Go.

   Look at your watch or cue the timekeeper

7. Begin raising your dominant hand over your head. Do it at least 5 times. Then raise your opposite hand over your head. Do that at least 3 times. Then raise both hands. Drop them. Then raise your dominant hand only to your shoulder 4 times. Next raise your opposite hand to shoulder level 2 times. Finally, raise your dominant hand to about eye level 3 times.

8. At the end of the 45-second observation period, again ask the group what their counts were. Record their answers on the chalkboard or paper. Be sure to read the section on "cautions and pitfalls" at the end of this activity regarding the results of the second handraising observation period.

Analysis:

Have the group discuss the following questions:

Did more of us reach agreement on what to observe during the second handraising observation period?

What was the behavior definition for "handraising"; did the definition follow the who, what, when and where format?

How much variability was there among the frequency counts from the first to the second observations?

Was it easier to record frequencies with a more specific definition?

Did the reliability (percent of agreement among participants' frequency counts) of the observations improve when a more precise definition of "handraising" was given?

Among the issues and points often raised with respect to observing and measuring behavior, are the difficulties in obtaining a precise operational definition of the behavior and establishing a sufficient level of reliability across observers. Be sure to stress the importance of redefining a behavior to be observed until 80-100% agreement can be established among the observers. The title of this activity—"Now You See It and Now You Don't—emphasizes that the reliability of any observation must first start with as precise a behavioral definition as possible to insure reliable observational results. The four "W" questions, who, what, when, and where, are integral parts and a first step toward insuring valid observations.

Cautions and Pitfalls: Successfully illustrating the need for a precise behavior definition in the "handraising" activity greatly depends on how well the trainer(s) model(s) the sequence and the precise instructions for both observational sessions. Also, if a poor level of agreement results in the second observation session after the four "W" questions for "handraising" have been addressed, *a third session* may be needed. The "handraising" definition may need to be redefined even more precisely using the four "W" questions, and the participants asked to observe and count "handraising" according to that refined definition. The purpose of this activity is to illustrate how important a precise behavior definition is in obtaining reliable and useful observation results.

ANSWER ANY QUESTIONS FROM ACTIVITY

Administer First Optional Instant Replay
Allow 10 minutes to Complete Instant Replay

We have concluded the presentation and activities for the Introduction to Observation and Measurement of Behavior. We are now ready to try a short "Instant Reply" which requires you to apply what has been presented so far. Turn to Page 1-3 in your handout.

Take about ten minutes to answer the questions on the worksheet (pages 1-3). At the end of that time we will go over the answers and answer any questions you might have.

REFER TO INSTANT REPLAY KEYS FOR ANSWERS

Discuss Instant Replay Answers
Answer Questions

PRESENTATION: COLLECTING DATA AND MEASURING BEHAVIOR

So far we have talked about and practiced ways of defining observable behaviors such as study behavior, handraising, kicking or hitting, etc. Now we are ready to look at some of the methods or techniques of measuring behavior.

SHOW TRANSPARENCY 3(T-3)

Go over it point by point

The *Anecdotal Record* is an interesting and helpful tool to start with, especially if a teacher doesn't know exactly which of many behaviors to choose or how to priority rank them. An anecdotal record consists of a brief written description of just about everything that happens as it occurs. But remember that teachers have other things to do besides recording data. So help them pick a span of time that is realistic—five minutes in the morning and five minutes in the afternoon—or a sample of time when they can spend some time writing down everything as it occurs. The advantages, of course, are to get an overview of the child's behavior during that sequence. But the disadvantage is that it requires continuous observation. It is impossible to write down everything, and you will find that it is easy to get behaviors mixed up in such a report. It is a cumbersome process, and it isn't very precise. But it can be useful.

SHOW TRANSPARENCY 4(T-4)

Go over it point by point

Teachers may be the originators of *Direct Measurement of Products* because they have grade books, attendance records, and the like. Direct measurement of a product is only possible when the behavior leaves something behind that can be recorded. There are many examples. Anything in a grade book, generally speaking, is a product. Spelling words or the number of units covered in math are also examples of products. Direct measurement of such products can be useful because teachers are used to keeping this type of data for other purposes. It is therefore easy for them to learn to use the same technique as it relates to the measurement of behavior. An advantage is that it is readily available. You can go back and check up on how accurate you were, especially with such data as grades on a report card. You can easily have someone else check the data as a measure of reliability. It doesn't interfere with teaching.

SHOW TRANSPARENCY 5(T-5)

Cover each point

Beyond the permanent product, we get into the observation of overt behavior. *Frequency Recording* is one method used by teachers and parents to record a great number of behaviors. Anything that can be tallied is amenable to the frequency count. One useful procedure is to have teachers just put a piece of masking tape on their arm. They almost always have a pencil with them, and the tape can be written on easily, thus making it easy to make tally marks. Another method is to use grocery store counters or golf counters.

Some creative kindergarten teachers and parents do things like put on an apron with a pocket of navy beans or popcorn on one side, and simply move them over to the other pocket one at a time. There are all sorts of creative ideas for taking a frequency count. Of course, teachers can continue to teach. The observation is not always as reliable as we might like it to be, but they're teaching while they're doing it.

A frequency count really lends itself to use by teachers because they can count behaviors while they teach, especially if they are obvious behaviors. It is also very useful for parents. So we don't talk much about anecdotal records. We stress frequency counts—current products. Parents have used the technique to carry out studies on behaviors like picking up clothes or doing chores. Getting kids to do chores is one of the most frequent problems mentioned by parents.

SHOW TRANSPARENCY 6(T-6)

Cover each point

Another useful kind of recording procedure has to do with *duration* or *latency*. There are some behaviors for which we are not so interested in how frequently they occur. We are concerned with how long the behavior lasts or how long from the time the teacher gives an instruction the behavior is completed. A good example of this is thumb-sucking. You decide you are going to count how many times a kid sucks his thumb during the day. But you discover that he puts it into his mouth in the morning and takes it out at night—count, one time! Then if you carry out a procedure designed to get him to take his thumb out of his mouth, your frequency count may show that he now puts his thumb in and out of his mouth 10 times a day. You have succeeded in getting him to take his thumb out of his mouth at least a few times, but your frequency count makes it look like the behavior is increasing (from once a day to ten times a day). This is just an example of one of the reasons why we learn a number of measurement procedures. It is important that we use the procedure that really tells us what we need to know.

Another important consideration is the ease with which a procedure can be used. An example of a behavior for which we would be interested in duration and latency is "completing assignments on time". If working with a child who is very slow, the teacher might use the wall clock to time how long it takes the child to do an assignment that should take five minutes. Maybe it takes this child 25 minutes. So we keep a record of that over time.

One advantage of using duration or latency as the basis for measuring behavior is that there are some behaviors for which it is more important to know how *long* than how *often* they occur. The disadvantage, at least for some behaviors, is that almost continuous monitoring may be required.

Show teachers different techniques of measuring behavior for different problems. If the problem they are looking at involves academics, then direct meaurement of products is probably most appropriate. The behavior does something that you can measure directly. When the problem involves knowing how long the behavior lasts, then the measurement of duration and latency comes into play.

SHOW TRANSPARENCY 7(T-7)

Cover all points

Time Interval recording is another procedure which teachers can sometimes use, but which is generally more useful for someone, like a school psychologist, who can go into the classroom and just observe without also having to teach. This is the procedure that was used in a lot of the studies that pioneered this field. It is the one we used with Robbie to record study behavior.

In interval recording we decide on a recording period and divide it up into equal segments. Then we record whether or not a behavior occurs in a given time interval. If the intervals are made long enough, many classroom behaviors are most easily observed by this method. It is an on-going measure. In some studies with preschool children, crying behavior is observed using interval recordings. Talking out in class is another behavior that could be observed and recorded effectively by this method.

Very often, however, the procedure requires an observer other than the teacher. That is why the school psychologist may be needed. If the timed segment is small it requires someone who can continuously observe; thus it would be impractical for teachers in those instances. Here is a specific example. You take the period of time you have for the observation, say one minute, and divide it up into 10 second intervals, 15 second intervals, etc. Let's say we are interested in attending behavior and the symbol for that is "A". If, during the interval, the student is attending appropriately, you mark down an "A" for the interval, and then go on to the next interval. Let's say the attending behavior was not occurring during the second interval, so you make a dash. Over a minute's time you find out the number of intervals during which attending behavior was occurring.

An advantage of interval recording, especially if you have an observer doing it, is that you can often record more than one behavior or the behavior of more than one person during each interval. In the case of Robbie and his teacher, Natalie Barge, we recorded *his* behavior and *her* behavior during each 10 second interval. This was how we discovered that when he was studying he didn't get attention initially, and when he wasn't studying he did get attention from the teacher because he was being disruptive. A school psychologist can use interval recording to observe the relationship between behaviors in the classroom like the interaction of teacher behavior and student behavior.

To observe certain behaviors a teacher might divide the day up into hour-long intervals. Let's say she has a child who often gets up and goes to the bathroom. It is possible to use an interval recording of whether or not he did that during each hour of the day. However, if the behavior is that low in frequency, it probably would be just as valuable to use the frequency count—how many times did the child go to the bathroom per day.

As a rule, I would say that interval recording is not too practical for a teacher to use while teaching.

In doing the actual interval recording, you have a recording sheet which you make up, perhaps like the one shown on the transparency. You can use a stop watch to measure the length of time. Especially in research studies, use is often made of an audio beeper which is designed to beep every 10 seconds, every 15 seconds, or whatever. These are available in case anyone would want to be that precise about it.

SHOW TRANSPARENCY 8(T-8)

Be sure to cover all points

There is a similar kind of recording to measure ongoing behavior that is more practical for teachers or parents to use. It is called *Time Sampling*. It's one of the important techniques that we teach to teachers.

Time sampling is somewhat like interval recording in that you do divide the observation period up into segments. But you don't observe the student constantly to see whether or not the behavior is going on during the interval. Instead you record only whether or not the behavior is going on *at the end* of the interval.

Illustrate the following example on the chalk board or on large paper

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For example, let's say we are to observe over a 60-minute period. We can easily divide a 60-minute period into ten segments of six minutes each. Each one of these squares represents six minutes. Once the observation period starts, we will note at the end of each 6 minute interval whether or not the behavior is occurring. If (name of a participant) were our subject, and we were trying to measure his/her attending behavior or his/her smiling behavior, we might record the behavior at the end of, say each six minutes. At the end of the first six minutes, we would simply put down whatever the symbol was for smiling, or if it was attending behavior, we would put down an "A", for example. Because we are using the time sampling technique, we can forget about the subject during the interval, and go on about our teaching, or whatever we need to do. Then at the end of the next six minutes, we have only to glance at (name of participant) and again record whether or not he/she is participating in the behaviors involved. This would continue throughout the whole session, with our checking every six minutes to see whether the behavior was being exhibited or not. It is relatively simple.

One of the advantages of this method is that it is nearly as accurate as the interval recording method. Over a period of time, it will come out very close to what you would get if you had a stopwatch on the person over that period of time.

A secret to using this method is to try to divide the observation period into 10 equal segments. If it is a 50 minute period use 5 minutes; a 60-minute period, 6 minutes, and so on. The reason for this is that it makes it very easy for you to convert the results into a percentage. Look at this example (point to example on Transparency T-8). The observation period is divided into 10 segments. Here we have 1, 2, 3, 4. At the end of four out of the 10 segments, the student was attending. What percent of the time is that? Forty percent, of course.

The following examples of time sampling were developed by Vance and Marilyn Hall. The trainer(s) can insert their own examples if preferred.

"One of my favorite studies was carried out by a parent who was concerned because her 12-year-old son wouldn't wear an orthodontic device that was supposed to fix his teeth. Using time sampling, the mother sampled the boy's behavior twice in the morning before he went to school and four times after school at a given interval. I think the interval was 30 minutes. Over a period of time she found that he was wearing his device less than 20% of the time. It wasn't sufficient to bring the teeth into line. The mother then carried out a procedure to change that, but she didn't tell the orthodontist. When she took her son in for his periodic checkup, the orthodontist said, "What is going on here? They're beginning to come back where they belong." The mother got the behavior up over 90%, and finally up to 100% of the time. In 10 months the boy was off the device. If they had started that procedure at the beginning it would have saved them $3000 in orthodontic bills."

One disadvantage of time sampling is that when the teacher is doing the observation and recording, she might forget and be off a bit. One way that some teachers have taken care of this is to have reliable students remind them when it is time to record, but there is a limit to that solution. Other teachers have used timers—ordinary kitchen timers—set to go off at the time when they're going to record. There are a number of ways to combat the problem. Some of the new $29.95 discount store watches have little beepers on them so even more people will be able to get time samples and be very accurate.

All things considered, the time sample method of recording observation may be the best way for teachers to measure ongoing behavior.

Let's review what we have covered so far in this presentation. We have talked about several measurement procedures. The ones that are very functional for teachers are the measurement of products where the behavior leaves something we can count, frequency counts where you just count every time that a behavior occurs, time sampling to get an idea of the level of an ongoing behavior.

To learn whether or not we have done a good job in defining behavior and measuring it accurately, we need to check on the reliability of our measurement procedure. That brings us to the next topic for discussion.

SHOW TRANSPARENCY 9(T-9)

Cover each part

Use chalkboard or large paper for examples.

The reliability of a measure has to do with the degree to which more than one observer can agree on what they saw. We encourage teachers, and parents also, to get a reliability measure of an observation procedure. For teachers we say, "Why don't you ask the school psychologist if he/she will come in and do a reliability check to see if your definition of the behavior is good?"

At home husbands and wives can act as reliability checks for each other. In carrying out the observation, they both use the same measurement procedure and the same definition to see if their records come out the same. When you have such a check you can be more sure that you have zeroed in on the behavior of concern.

Sometimes a teacher will want a behavior to change so much that the way she/he records the behavior will change and not actually the behavior itself. So getting a measure of the reliability is very important.

To compute reliability (how much agreement there is) we simply obtain the percent of agreement between two or more observers. For example, let's say that in counting the number of fights on the playground per week, one observer got 18 and the other got 20. All we do is divide the lesser number (the 18) by the larger number (the 20) and then multiply the result times 100 to obtain the percentage. In this case that would be 90%. Very simple.

Refer to Transparency T-9 for examples

If using interval recording, or time sampling, we usually just look at agreement and disagreement. Let's say we had a record like this (point to Number 2 on Transparency T-9). Now the records don't agree during these two intervals. They do agree here. So the number of agreement is how many out of 10? (Wait for participant's response) Eight. So we divide the agreement by the disagreement plus the agreement, and we get .8, which when multiplied by 100 will be 80%.

Are there any questions about either of those examples, or about computing the reliability?

Have participants compute the percent of agreement for Problem 3.D. on their worksheet

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On page 8 of your worksheet materials there is a very simple problem. What would the percent of agreement be in that case for problem 3.D.? Go ahead and compute the percent of agreement in this case.

SHOW TRANSPARENCY 10(T-10)

Have Participants Work the Problem

Be sure to cover the answer while the participants compute!

What would the percent of agreement be for the problem presented here *(point to transparency T-10)*? Can you see the disagreements? Where is the first one? *(check for agreement all the way across)* Now what would the percentage of agreement be? They agreed how many times? Seven times. They disagreed three times. Now let's put it down as a problem. *(Uncover the answer on the transparency)* How many times did they agree plus disagree—7 + 3 = 10. So we divide 7 by 10 and multiply by 100, and what percent is that? Seventy percent (70%)

The reliability is always the percent of agreement. Whether it is a dad and a mother, or neighbor, or who ever, there are always at least two persons recording when you are checking for reliability. The point is, how reliable is the definition and how accurate is the measurement procedure?

There are no set rules for what an acceptable level of agreement should be, but a rule of thumb is 80% as a minimum. So the 90% in the first example on the transparency is excellent. For some types of measurement procedures, it is pretty easy to get high reliability. For example, with spelling or math products you usually have very high reliability. It is a product that is permanent. You can check it and recheck it, and be very careful about it. It is common to have 98% reliability with such procedures.

But observing cooperative play, for example, is quite different. If you get 80% there you are doing well.

Now, why do we do this? Why teach a teacher or parent to figure reliability? It's a very real concern, because their measures may very well be off, and sometimes off to a significant degree. If they are off, it is usually not their choice of a measurement procedure that is wrong, but rather their definition. If the definition is off, it is necessary to go back and do the 4 "W" questions again so that both observers understand it. They observe again and usually get much better agreement.

Do Activity 2

ACTIVITY 2

A (PRIMAL) SCHOOL HOUSE EXPERIENCE

Purpose: To provide practice in Collecting data and measuring behavior.

Time: 45 minutes: Introduction . . . . 10 minutes
Activity. . . . . 25 minutes
Analysis . . . . 10 minutes

Group Size: Need at least 5 persons but can be used with larger groups. Limited only by skills of trainer and ability of participants to view the action.

Group Structure: Two or three participants may be selected or may volunteer to serve as actors/actresses in the activity. Character descriptions will be provided. The remainder of the group will serve as observers with instructions provided by the trainer.

Physical Setting: Because observations must be conducted, visibility of the characters is an important factor in the setting. The room in which the workshop is being conducted is usually sufficient.

Materials:

1. A separate copy of each characterization for the actors/actresses (these can be returned and re-used).
2. Chalkboard and chalk
3. Transparency

Overview: Participants will be assigned a simulated student (one of the actors/actresses) to observe. There will be at least two opportunities to observe. During the first opportunity, participants observe for the referral problem. At the close of the observation session, participants compare observations and discuss findings. They may choose to redefine the behaviors if necessary.

A second observation session is then conducted. At the end of the second observation session, participants again compare their findings. The trainer facilitates discussion and raises issues.

Process:

1. Select two or three participants to serve as simulated students. The trainer may ask for volunteers or simply request the assistance of selected participants. Emphasize that the only requirement is to follow a role description.
2. Meet with the two or three participants to discuss their roles. It is important that the role descriptions are followed as closely as possible. Ask them to read the de-

scriptions while you explain to the remainder of the group what they are to do.

3. Explain to the Group:
This is an exercise in observation. You will be given a referral problem for the student you are to observe. The observation period will last five minutes after which you will have time to discuss with others observing the student what you saw. Following a discussion period, a second observation session will last three minutes. After that observation period, additional discussion will culminate the exercise.

   Now divide the group into equally numbered subgroups, one subgroup for each simulated student you have selected. For each subgroup, announce the referral problem that the teacher has reported (see the role descriptions). Tell each subgroup to define the behavior, select a measurement technique and recording procedure, and develop a recording sheet. Tell the group to be sure to sit where they can see the student they are observing. Provide as little information beyond the referral problem as necessary. Be vague about what the teacher's concern is. Commence the observation session as quickly as possible to keep the activity moving.

4. Start the first observation period. You act as the teacher with minimal involvement in the action. At the end of five minutes say,

   STOP

5. Now ask the groups to study their observations and discuss among small groups of 3 to 5 what they say. Each small group should also answer the following two questions:
   a. Were you able to get good reliability?
   b. Was the method chosen one that accurately reflected the level of behavior?

   Write these questions on the chalkboard. Allow approximately five minutes for discussion.

6. Ask the group if the behavior they are observing conforms to the standards of who, what, when, and where. Display the transparency (T-2) and tell the group to re-define the behavior if necessary. Give the group a few minutes.

7. Start the second observation period. At the end of three minutes, say

   STOP

8a. Ask the group to study their observations and discuss again what they say. Remind them to answer the two questions on the chalkboard. Allow the group to discuss for five minutes.

8b. *OPTIONAL.* You may repeat the second observation period if the subgroups need additional experience following further definition of the behavior.

Analysis: Address the Group and ask for reactions.
Did everyone reach agreement on what to observe?
Did anyone estimate reliability?
What does this activity try to present to the group?

Among the issues that are often raised are the difficulties in gaining an operational definition of behavior, the difficulties in obtaining a sufficient level of reliability, and the need to study both the teacher's and the student's behaviors, etc.

OPTIONS: The various definitions used by the group might be compiled (write them on the chalkboard). In large groups check to see how many ways the same behavior was measured. If there were problems in reliability, what were they? How could they be prevented in the future?

Cautions and Pitfalls: Any dramatic opportunity can bring out the comedian in some of us. If the cutting-up gets in the way of the purpose of the activity and the needs of the learners, you may have to intervene.

If a group measures the wrong behavior or uses an inappropriate technique, embarrassment can turn to defensive responses. Listen and support the participants and move on in the agenda as quickly as feasible.

Role Descriptions: The following three pages contain three role descriptions that are to be given to the actors/actresses as per the instructions under "Process" above.

A School House Experience
Marilyn or Michael

Referral Problem: A real pest. Won't stay away from my desk. Everytime I look up s/he's standing there.

Role Description: First Observation Period (5 minutes): After approximately one minute, get up and go to the teacher's desk. Ask the teacher "Will you give me a pencil?" When you have received a response return to your desk. Wait approximately 30 seconds, then go back to the teacher's desk and ask a question about your work. After receiving a response, return to your desk. Wait approximately 30 seconds, then go back to the teacher's desk and ask "What time is it? When do we go to lunch?" When you hear what the teacher has to say, return to your desk. As before, wait a brief period and go back to the teacher's desk. Make about 5 to 6 trips during the observation period.

Second Observation Period (3 minutes): Wait approximately 30 seconds and go to the teacher's desk area but mill around. If the teacher asks you to sit down, move toward the seat. If you actually sit down (depends on how stern the teacher sounds) get up again, and head for the teacher's desk, but don't engage the teacher.

Optional Third Observation Period (3 minutes): Same as second.

Have fun.

A School House Experience
Vance or Vivian

Referral Problem: Can't stay in his/her seat just like a jitterbug, can't sit still.

Role Description: First Observation Period (5 minutes): After approximately one minute, get out of your seat and go to the window. Then go to another seat, look around, and then go to the teacher's desk. Pause only briefly. If the teacher asks what you want, say "nothing." Next go to the back of the room and return to your seat. Pause at your seat one minute. If there is time available, go to the window again and return to your seat.

Second Observation Period (3 minutes): Get out of your seat, stand by your desk, and sit down again. Next sit on your knees, sit on the desk or table, get under the table (if possible), and generally move around, but stay as much in the seat area as possible.

Optional Third Observation Period (3 minutes): Same as second.

Have fun.

Alan or Alisha

Referral Problem: S/he's so sneaky. I don't trust him/her. One minute everything is fine, the next minute s/he is a real problem. Gets everyone in trouble. I wonder what s/he is thinking.

Role Description: First Observation Period (5 minutes): Begin the period exhibiting study behavior, working on the papers on your desk. After approximately 2 minutes, put your pencil down and talk to yourself (aloud—normal conversational tone). Look for Marilyn/Michael who will be in their seat occasionally and attempt to distract him/her. Then return to your work until the 5 minutes are over.

Second Observational Period (3 minutes): Work at your desk obviously being studious. After about one minute put your pencil down and gaze out the window for the remainder of the session.

Optional Third Observation Period (3 minutes): Same as second.

ANSWER ANY QUESTIONS FROM ACTIVITY 2

Administer Second Optional Instant Replay
Allow 10 minutes to Complete Instant Replay

We have finished the presentation and practice session on measuring behavior and collecting observation data. We are now ready to complete a short instant replay over the material covered so far. Take about ten minutes to answer the questions on your worksheet. At the end of 10 minutes, we will go over the answers and discuss any questions you might have.

REFER TO INSTANT REPLAY KEYS FOR ANSWERS

Discuss Instant Replay Answers
and Answer Questions

PRESENTATION: SELECTING APPROPRIATE MEASUREMENT PROCEDURES AND RECORDING TECHNIQUES

We have just completed our discussion on defining behaviors to be observed and collecting data by looking at various measurement techniques and the advantages and disadvantages of each.

Now we are ready to take a look at some of the methods used to *chart* behaviors.

What do you do after you begin recording the data? We have learned to chart behaviors very simply. A visual record of the behavior is much easier for almost any of us to relate to. There are some people who have advocated very complex systems. But we have found that a simple chart—a very simple graph—is easiest for almost anyone to read and understand.

First, we get a baseline record and chart it so that everyone can see what the initial behavior is. To do this we just make a very simple graph. There are various types of graph paper available designed specifically for behavioral data. You can use regular graph paper, or make your own graph on a white sheet of paper.

SHOW TRANSPARENCY 11 (T-11)

Use the transparency as a visual aide for the following material.

The *baseline* is simply a record of the behavior before you do anything about it. The baseline is very important! We tell everyone who uses this system that they should get a record of the behavior before they start to do something about it. There are two reasons for this:

First, one of the most important reasons for obtaining a baseline is that unless you know what the behavior is to begin with, you don't really have a good way of knowing whether your intervention is working later—whether the behavior has really changed. Without a baseline, a teacher can't tell whether Johnny's behavior is getting better or not. So when you ask him/her later, "How's it going with Johnny", s/he is likely to respond with something like, "Well, I *think* maybe he is doing better." Maybe he isn't doing better at all. Or maybe he is. Since the teacher doesn't have a benchmark—a baseline—s/he can't really tell you.

Also by having a baseline in the beginning, you have data to support the continued use of a strategy even when, for other reasons, the teacher or some other official wishes it stopped. How many times in the classrooms of America have we qui using a procedure that was good simply because we were unable to show that it was working. We know it was working, but we couldn't show it. A baseline will give you that kind of data.

A second reason to obtain a baseline is that it sometimes solves the problem all by itself. Two things may happen. Very often, for some seemingly miraculous reason, the behavior gets better while you are going through the procedure of obtaining a baseline. This happens perhaps 10 to 20 percent of the time. Don't ask me why, because no one knows for sure, but it happens.

The other thing that happens, probably more often than 20 percent of the time, is that the teacher or parent finds out that the problem isn't as big as he or she thought it was.

For example, in one of Marilyn Hall's courses for parents of high school students, the parents learned observation procedures and went home and recorded behaviors. They had defined very nicely the behaviors they were concerned with. One set of parents was concerned about a son's behavior of arguing with them. They decided to record this behavior over a two-week period. They came back amazed and reported that during that time their son had engaged in the offending behavior exactly once! One time. They had discovered that he wasn't giving them such a bad time after all in that respect. So they decided to define another behavior to work on.

(point to Transparency T-11) So we try to get a baseline, and we chart the level of the behavior along the vertical axis of the graph.

Let's use tantrum behavior as an example. We record the strength of the behavior, which in this case is the number o tantrums up the vertical axis on the left side of the graph. We choose a series of numbers that is indicative of the level of the behavior. In the case of our example (point to Transparency T-11), we have chosen 5, 10, 15, 20, since the child tantrums up to 18 times in a day. We use this scale for the vertical dimension of our graph to indiate the strength of the behavior.

(point to the example on the Transparency)

Now, along the horizontal axis, we plot the dimension of *time*. In this case we are using days, but it could be weeks; it could be sessions; it could be periods of the day or most any other period which indicates the passage of time.

Here is the first day we observed this child *(point to the numbers on the transparency)*, the second, the third, fourth, fifth, and so on.

On the first day the child in our example had 15 tantrums, then the next day the number was down to 10, then up to 18, then 16, 10 and finally up to 17. We get a data point for each day. It is very simple charting. Usually then we make a simple line graph by connecting the data points. That gives us a visual image that most anyone can use to get a picture of how the behavior is going. You can tell, for example, what the average number of tantrums is just by eyeballing the graph. What is the approximate average (or mean) in this example? In other words, about how many tantrums are there per day, on the average? About 15? That looks about right. And you can see this very easily by simply looking at the graph.

Now when we do a baseline and then continue on with the charting after the intervention procedure is started, we usually connect all of the points, but draw a vertical line after the baseline portion of the graph. In this example the vertical line would be drawn right here after the sixth day *(point to the place on the transparency)*. More on that later.

So there is a baseline. That's all there is to it. It shows where we are before we try to do anything about it, in other words, before we begin the intervention that is designed to change the behavior at this point, we should do a reliability check. Let's say that on the third day *(point to the spot on the transparency)* where we noted 18 tantrums, another person comes along and does a reliability test for us. He is the second observer. We give him the definition of what we mean by a tantrum. Then he also counts tantrums that day, but he comes up with only 15. We record his count with a small box as you see here *(point to the tiny box at day 3 on the transparency)*. On the fifth day the second observer got the same count as we did, as you can see there by the small box located at the same point as our count. On the fifth day, at least, we have 100% reliability. Back on the third day we had somewhat less than that, but usually when we get one or two points where the agreement is pretty close, that is probably good enough. Are there any questions about that?

SHOW TRANSPARENCY 12 (T-12)

When we get a baseline like the one in this example (point to the transparency), it is often necessary to compute the mean level of the behavior before we can describe the behavior adequately. Sometimes just eyeballing it isn't enough as in this case where the student has a habit of reversing D's and B's. Each day the observer noted the number of reversals out of a certain number of pages of material. The count was as you can see, 43, 45, 39, 47, and 46. Now we can graph that, as we have shown on the transparency. But in order to describe it to someone else more effectively, it is often helpful to get the arithmetic mean. So how do we do that?

Most of you probably already know this, but to review, we simply add the scores obtained for each day of the baseline observation, and divide by the number of scores. The sum of the scores is 220, as you can see, and when we divide that sum by 5 (which is the number of scores) we get an average score, or a mean score, of what? 44. That is all there is to it. The next important thing about a baseline is what you do with it. It helps you establish a goal, a kind of minimum level of the behavior which you believe is acceptable.

SHOW TRANSPARENCY 11 (T-11)
AGAIN!

You remember we talked about putting a vertical line on the graph after the baseline. Another thing that is done is to leave the space between the last point of the baseline and the first point of the next phase—intervention phase—blank. That is, you don't connect those two dots. You connect the dots in the baseline phase and you connect the dots in the intervention phase, but between these two phases you don't connect the dots, just place the vertical line. By following this procedure you leave no question as to where the baseline ends and the intervention begins.

SHOW TRANSPARENCY 13 (T-13)

Generally there are three kinds of baselines. Remember, we have the level of the behavior on the vertical axis *(point to the vertical axis of the first example on the transparency)*, and on this particular one it is the number of spelling words correct. Let's say that these are Friday tests, so time here would be the weekly tests. We have week 1, 2, 3, 4, 5, 6, etc. According to this record, there were two correct on the first week, four the next week, four the next, then three, five, and six. What kind of baseline do we have here?

It's an *ascending* baseline. Would now be a good time to change what's going on in spelling class for this child? No, because it looks like this child is getting better. The procedure appears to be working, so let's leave it a little while longer. If it continues to work, we're in good shape.

Here's one on tantrums *(point to the second example on the transparency)*. The level of tantrums is up the vertical axis, and the time is given in days. The number of tantrums is 12, 10, 7, 8, 5, 4. Here we have a *descending* baseline. Since it is tantrums that we are recording, we would say we must be doing something right, because the tantrums are decreasing. If we keep recording and they go back up, over time, our baseline will then indicate that it isn't really descending, but that it is a stable baseline that happens to fluctuate over a certain range.

Now lets look at this one *(point to the third example on the transparency)*. Here we are concerned with the number of minutes a child studies over a 10 minute period. The graph tells us that on successive observations the child studied for 4, 5, 3, 4, 5, 4, and 4 minutes. As you can see, that is a *stable* baseline, and that is what we usually look for. In fact, that is what we usually see over a period of time—that most behaviors have been going on for a long time and that those behaviors we are concerned about will show some kind of stability.

As soon as we see about where that behavior is, on the average, we can begin thinking about *intervention*.

But let's review briefly before we talk about intervention. We have talked about evaluation procedures, and we have established a need to be precise in defining behavior. We have learned how to observe the behavior using the most relevant measuring procedure: a permanent product, an anecdotal record, frequency or event recording, duration or latency measures, time samples and interval recording.

Why are we dealing with all of this, when all of us know that what we really care about is helping the child? It should be clear to you by this time that if these procedures (or something similar) are not engaged in, we might never know whether we have effectively helped the child. So it is important to keep in mind the basic reason behind why we learn all of these procedures and steps.

Now it's time to talk about intervention. In times past, we talked about operant conditioning or behavior modification, indicating that a lot of emphasis should be placed on changing an inappropriate behavior. Teachers often talk to you about behavior that is occurring, whether it be social or academic, in the classroom or out of the classroom, that is *inappropriate*—behavior they want you to help them change or eliminate. They will tell you how the behavior is interfering with the child's well-being, his/her position in the classroom, or his/her academic progress. This way of thinking and talking about a child has a negative connotation. It makes the school psychologist, diagnostician, or whoever, think first about changing or eliminating the offending behavior.

But let's present a concept that means the same thing but comes across more positively. I'm talking about teaching the person a *new behavior*. You have a child, for example, who is raising a hand, or out of his seat, or throwing temper tantrums, or not learning her vocabulary words, or his number facts, or her sounds in speech class, or whatever the behavior is. As long as such a child is alive and breathing, s/he is engaging in some kind of behavior. You can't be inappropriately out of seat and appropriately in seat at the same time. Every inappropriate behavior has an incompatible appropriate alternative behavior. So if you think about teaching new behavior, you can generally help the teacher or whomever come up with an incompatible, appropriate behavior for whatever inappropriate behavior is taking place.

Again, let's review briefly. We teach people four important steps in observation skills. They begin with defining behavior and measuring that behavior. Those are steps 1 and 2. Then we teach the intervention procedure, which is step 3—that is, how to teach the child a new behavior. Finally, the fourth step is to evaluate what is going on. Number 4 really goes on all the way through the entire process. You ask yourself if you have a good definition, whether you have chosen the most appropriate measurement procedure, and if the intervention is working. These are all evaluation procedures, so evaluation goes on all the way through the process.

SHOW TRANSPARENCY 14 (T-14)

During this next discussion, we are going to talk about the 3rd step in that 4-step sequence: *Intervention*. The first intervention procedure we will take a look at is called an "AB Design" *(point to "A" on Transparency T-14)*.

On the vertical axis, we have defined the behavior as the number of appropriate social interactions that the child engages in during free time. On the horizontal axis we have days as the measure of time. During the baseline measurement phase, you have found that there is not much going on in the form of appropriate social interactions. If we were really doing a formal measurement procedure, somebody else would have done a reliability check. Let's say, for convenience, that they have counted the same number of social interactions, so the reliability checks out. Now it is time to begin the intervention procedure. In this case the intervention might be attention from the teacher toward the child for being close to another child in a situation which could lead to an appropriate social interaction. We can pretend that that is what the teacher has decided to do.

We teach our teachers and parents to use social reinforcement first because it's always with them; it doesn't cost the school or the family anything. Such personal attention toward the child at appropriate times might very well be all that is necessary to increase the behavior. So, in our example, let's say that the teacher does this, and continues to record the behavior on her graph. As a result, something like this happens *(point to the transparency)*.

By looking at the simple data presented in this form, the teacher or parent can say, "I believe that what I'm doing is making a difference. I believe the youngster is becoming more social, or at least having more interactions with the other children." We assume, at least we'd like to believe, that it is because the teacher is giving attention to the behavior she wants rather than to the behavior that she doesn't want.

(point to "A" on the transparency again) This, then, is called the simple AB design. We have a baseline in A and we have implemented the intervention procedure in B.

What we are really after is to teach children new and better behavior so that they are more successful. Simple data like this gives us an indication that this is going on. I am going to talk to you about more sophisticated scientific justification, but all and all, if you can get your parents and teachers to do this much they will have a pretty good idea of what's going on. Without this, no one really knows if the intervention is appropriate or makes any difference. Sometimes the difference is so small that it's hard to tell, and there is a temptation to change the intervention procedure too soon.

So it's very important to teach the teachers and parents who will use these procedures that the process of evaluation is an important thing for them to include. For one thing, you don't always want to have to race back and do the whole thing over again. And if you do a good teaching job as school psychologists, as diagnosticians, or whoever, your teachers and parents will be more apt to implement the procedures themselves without calling on you so often.

(point to "B" on Transparency T-14) Now for a second research design, the ABAB design. In this example, we are recording a behavior we don't want. Generally speaking we try to get people to put things in a positive frame of reference, and to increase an appropriate behavior, but a classroom teacher with 30 kids isn't going to spend very much time in, or have very much time for, taking data. But let's say that this youngster i engaging in a number of inappropriate behaviors which hav been defined, and we get something that looks like the example on the screen during our simple baseline observation. Remember we are looking for a trend in the baseline. In this case we have a fairly stable baseline. It appears to be ascending, but we can't be sure.

The teacher has decided that the intervention will be to give social praise for not fighting or teacher attention for not fighting.

The results are shown in the "B" section of the example *(point to example "B", on the transparency)*. The intervention worked like this. You see that the trend is now going down, and we assume it is due to teacher attention and social praise for not fighting. But to really know if that is the cause, it is important to have the teacher withdraw that praise and attention for not fighting and go back to scolding the child for acting inappropriately. If the behavior returns under these conditions *(point to the second "A" section of example "B" on the transparency)*, then you have proof that it is the teacher's attention and praise for not fighting that is making the difference with this youngster. This is called a *reversal* design. You reverse at the second "A" and then reinstitute the intervention at the second "B".

In this four-step model, you continue to measure throughout—while obtaining the baseline, putting your intervention procedure into effect, taking it back out of effect, and then putting it back into effect. And all of the time you are evaluating the process.

(point to example "C" on Transparency (T-14) Let's consider a third example. This one illustrates the fact that you can' always guess what's going to work. In this example, the teache is having a problem with temper tantrums on the part of a child in kindergarten. During the baseline phase of what we call the ABCAC design, we establish that this youngster is showing inappropriate behavior which we define as temper tantrums. The teacher tries the natural consequences readily available which might be social praise or attention. The result looks like this *(point to section "B" of example "C" on the transparency)*. And notice that we have had a reliability check, so we are fairly sure of our data.

In this case it appears that the social reinforcement just didn't work, so we try something else—a second intervention procedure. This time the teacher tries some type of activity reinforcer, token economy, or maybe a mild punishing consequence. This time *(point to section "C" example "C" on the transparency)* we get results that show the level of tantrums is dropping off.

Now if we really want to test whether or not the results were caused by the intervention procedure, we can revert to baseline conditions again *(point to the second section "A" of example "C" on the transparency)*. As we found in the previous example, if the behavior returns to baseline levels and then declines again when intervention is reinstated, you have scientifically verified that it is the intervention procedure that is doing the trick.

Illustrate the following example
on the chalkboard or large paper

Another way to evaluate what you are doing and avoid th need to do a reversal is to engage in something called *multiple baseline*. Remember that a baseline is a level of the behavior as it is occurring before you try anything.

To illustrate multiple baseline recording, let's consider several behaviors that are similar but also different, like crying, whining, and pouting. You define each one of them and begin charting them on three separate graphs. Soon you would have three separate baselines which you obtained at the same time on each of these three behaviors. At this point you decide to use it only on the crying behavior at first. So you begin the intervention with crying, and you continue to record all three behaviors. After a time, you may very likely notice that crying behavior has decreased, but the two behaviors for which no intervention took place have remained at baseline levels.

At this point you can introduce the same intervention—teacher approval and attention—for not only crying but also whining. If you get a decrease in whining as well as crying, but your baseline stays up for pouting, you have scientifically verified that it is your procedure and not something else that is making the difference. At that point, of course, it is time to introduce the intervention to the third behavior, and hopefully you should get favorable results.

The multiple baseline procedure can also be used across subjects; you introduce the same intervention for the reduction of the same behavior in several different children. In such a case, however, you would introduce the intervention at different times while continuing to chart the same behavior for all the children. And, of course, you can use multiple baseline to observe the results across different settings. It is a very useful tool.

SHOW TRANSPARENCY 15 (T-15)

Let's discuss an example of using multiple baseline across settings. Let's define the behavior as "completing assignments". Here is the situation that is presented to you when Susan is referred: Susan doesn't complete her work in French class, home economics, or English. First we obtain a baseline for each of the classes *(point to transparency 15)*. Then we start an intervention procedure in French class, and we note that she begins to complete her work in French. We continue to record baseline data in home ec and in English. Next we introduce the intervention procedure in home ec, and finally in English. With results like the ones you see here, we have scientifically verified that it is the intervention strategy that has caused the change in behavior.

Are there any questions on multiple baselines?

Answer any Questions

SHOW TRANSPARENCY 16 (T-16)

Point to "A", Comparison to Baseline

Let's look now at your worksheets. Turn to the section entitled "Obtaining Comparative Data" on page 15. We are going to discuss setting goals from *baseline data*. We encourage teachers, parents, and others to set academic or behavioral/social intervention goals from baseline data. A baseline gives you an idea about what goals you should set for that behavior.

For example, in looking at some baselines you might determine that a student is probably able to reach 100% mastery. In such a case, you can set that level as the goal. If he does it half the time, he can probably do it all of the time. But, on the other hand, maybe that isn't a reasonable goal for that particular child.

In writing an I.E.P., for example, baseline data can help you set a standard. In fact, if you set up an I.E.P. in that manner, it will be a lot easier to see whether or not the objectives you get are being met. You could very easily set up one like that at any level in any subject. For teachers' and parents' information if you make a visual display it is much easier for them to see changes in behavior than if you just have it written out.

Point to "B" on Transparency 16 (T-16)

The next example, selected to illustrate "Objective Standards", is taken from the state of Vermont's Special Education Program, which is based almost entirely on a set of systematic measurement procedures. In many of their schools they have set up minimum objectives in every classroom. They measure the progress of students and chart it against those objective standards.

Example "B" on the transparency shows a program of reading units. Let's say in this particular reading series there are two units to be covered per month over nine months. There are nine months shown across the bottom of the example, as you can see. If the child finishes two units each month, then s/he would have completed 18 by the end of the year. What the teacher does here at the end of every two weeks is mark where that child is. As time goes on, if the child is completing only one unit per month *(point to the first 3 months of the example)* it wouldn't take long to notice on the graph that the child is below the minimum objective which would be right here *(point to the slope illustrating the objective)*, and that would mean that the child needs help. So you would give that child some special assistance in order to bring him up to the minimum acceptable level. Some children, of course, will go off the top, above the minimum objective, and complete the units even before the nine months are over. But that presents a different kind of a problem.

As you can see then, such a method gives you an objective picture of where the child is compared to a set standard. It takes a lot of work on the part of the teachers and the staff working together to set minimum objectives, at least in some subjects. In other subjects it is easier, and some curriculum materials are being produced which already specify objectives.

When you are writing an I.E.P. for a child that you are having special problems with, it might be worthwhile to set minimum objectives like this and then keep tracking that child to see if he is coming up to criterion over a period of time.

Do you have any questions about this procedure?

Answer Questions

Point to "C" of Transparency 16 (T-16)

Another way of setting objectives using observational data is to *observe the peers*. Sometimes the teacher will be concerned about a child because she's always out of her seat or for some other reason. But when you observe, you learn that she is no worse than the kid sitting next to her. This is something that often happens. But the data you have from this procedure then give you evidence that the child may not need the special attention that the teacher thought she needed.

On the other hand, sometimes we do find that a child's performance is very different from his peers. *(point to "C" on the transparency)*. This example is taken from a study that used a tutoring program in which the mother was taught to tutor in spelling. During the baseline observation, as you can see, the percent of words correct on the Friday tests for the child was much lower than the average for the rest of the class.

What the parent wanted was for the child to do at least as well as the rest of the class. That was the goal. The tutoring intervention was carried out and sure enough, by the time the mother was through, his mean Friday test score was somewhat above the class mean.

That's another way of setting an objective based on your baseline data.

Point to "D" on Transparency 16 (T-16)

When you are going to observe a student, it is often very helpful to observe the teacher also. For example, when you do a time sample on the student or an interval recording, record whether or not he is attending during that particular interval. *And also* whether or not the teacher is contacting that child during the same interval. Is that teacher giving attention? If so, let's say we put an "X" when he's attending. It is possible then to get some evidence about what might need to be done. In Robbie's case, when we found that the only time the teacher contacted him was when he was being disruptive, it gave us something to suggest that she do differently.

This type of information can be very important observational data that is easily obtained, and it is even possible to ask the teacher to keep that kind of data. You say, "Okay, when he is being disruptive, would you keep track of exactly what you do, how many times you have to contact him, etc.?

We are now ready to practice or apply the information presented so far on "selecting appropriate measurement procedures and recording techniques".

Do Activity 3

ACTIVITY 3

YOUR FAVORITE REFERRAL PROBLEM OR ASSESSMENT QUESTION:

A Group Experience

Purpose: To provide practice selecting appropriate measurement procedures and recording techniques.

Time: 15 to 45 minutes: Introduction ...... 5 minutes
Activity .... variable
Analysis .... 5 minutes

Group Size: 5 to 25 persons. It is not particularly helpful with large groups of 35 or more to use the format described here. An optional format for large groups is suggested at the end of the handout.

Group Structure: Small groups of 2 or 3 persons.

Physical Setting: The room in which the workshop is conducted is usually satisfactory.

Materials:

1. Copies of the referral problems numbered one through eleven.
2. Transparency materials if optional format is used.

Overview: Participants are divided into small groups and given one or more referral problems or assessment questions to use during the activity. For each problem or question, the small groups select a procedure and recording technique and address other instructions printed on the page. After a brief work period the small groups share their answers with the entire group. The trainer mediates the discussion.

Process:

1. Divide the group in small groups of 2 or 3 participants each.
2. *Tell the Group*, I'm going to give each small group one or more typical referral problem(s). Each has two instructions to follow. You will have five minutes for each problem. When time is up you will share your work with the group as a whole.
3. Distribute problems to each small group. Choose the number of problems per group that will fit the time you have available and the learning needs of your group. Additional problems can be generated using the references for the Observation Section.
4. Allot approximately five minutes per problem. Circulate among the groups consulting where questions arise.
5. At the end of the allotted work time, ask a group to present their problem or question to the group, using a spokesperson, and the result of their discussion. At the end of each presentation ask the group for comments and questions.
6. When each group has reported, ask for any additional comments.

Cautions and Pitfalls: Any time a person speaks in front of others, especially colleagues, there is a margin of inter-personal risk. Support each group's spokesperson. If an error is made in the selection of procedure or recording technique, gently suggest an alternative. Remember, if the appropriate answer wasn't presented, the training was insufficient.

Referral Problem #1

A teacher is concerned that one of her students rarely participates in class. She is uncertain whether the pupil seldom volunteers (i.e., raises her hand) when the class is asked a question or whether she does not notice her when she does raise her hand.

1. Set up a measurement procedure, including a data sheet, which will answer the teacher's questions for her.
2. How would the teacher go about determining whether she was encouraging the student to participate at the times when the youngster did answer in class?

(Source: Axelrod)

Referral Problem #2

Terry is an extremely disruptive child. The teacher feels that he might be encouraging Terry's disruptiveness by attending to the youngster when he is inappropriate, but failing to attend to him when he is appropriate.

1. Devise a measurement procedure.
2. Provide a data sheet which will allow the teacher to confirm or deny his suspicions.

(Source: Axelrod)

Referral Problem #3

A teacher would like to determine whether a student of his is a social isolate in free-play situations. His social behavior should be compared with that of his classmates.

1. Devise a measurement procedure.
2. Suggest an accompanying data sheet.

(Source: Axelrod)

Referral Problem #4

Suppose you wanted to set up a measurement procedure for conveniently determining how long it takes each student to complete an assignment.

1. Suggest a procedure for doing this.
2. How would you handle the bookkeeping problem?

(Source: Axelrod)

Referral Problem #5

A teacher feels that although Mike is usually well behaved, there are periods of the day when he is disruptive. She suspects that the disruptiveness may occur more frequently when she teaches some subject areas than when she teaches others.

1. Indicate how the teacher might measure Mike's behavior in order to test her suspicions.
2. Include a sample of the data sheet the teacher will use.

(Source: Axelrod)

Referral Problem #6

A physician prescribes a back brace for a child who has recently been in an automobile accident. The child seldom wears the brace because his classmates make fun of him when he does.

1. Suggest a measurement procedure for this problem.
2. What measurement procedure would you suggest a parent use if the child wears the brace intermittently at home?

(Source: Axelrod)

Referral Problem #7

John has poor word recognition skills. He is bright and rarely disruptive but his teacher has noticed a decrease in his interest and willingness to participate.

1. Quantify the problem.
2. What measurement procedure or procedures would you use in obtaining baselines?

(Source: Fox)

Referral Problem #8

Mr. Harris is working with high school underachieving students. He notices that although the students are attentive and appear to be comprehending the lectures, they nonetheless perform poorly on unit tests.

1. Can you recommend a measurement procedure to use to investigate this problem?
2. How would you go about tackling the problem?

(Source: Fox)

Referral Problem #9

Mike often reverses the letter "d" when he copies a short story that is written on the chalkboard each day. This activity is usually done just before morning recess.

1. How would you measure the problem?
2. How would you present the data?

Referral Problem #10

A mother is concerned about her son Sid's eating behavior. This has become a problem in that it is costly, and more importantly, he is gaining weight. Sid's mother has thought about using his allowance as a consequence and employing his brothers in some manner to measure or change the behavior.

1. Suggest a number of measurement techniques to measure this problem.
2. Which measurement procedure would you choose? Why?

(Source: Fox)

Referral Problem #11

Ms. Smith is a new teacher with classroom control problems. Her room is very noisy with students shouting, throwing things, and chasing each other over and under tables. Ms. Smith gives instructions for academic activities with only a few students attending to her. She gains control (their attention) only occasionally for short periods of time when she "blows up" and shouts at her students. She often makes threats of punishment but rarely follows through. She states that she just can't bear to keep a student in at recess.

1. Indicate a measurement procedure to use and design an accompanying recording sheet to facilitate this process.
2. How might the data generated be used to begin helping Ms. Smith gain control of her class?

(Source: Cossairt)

ANSWER ANY QUESTIONS FROM ACTIVITY 3

Administer Last
Optional Instant Replay

Allow 15 minutes to Complete Instant Replay

We are now ready to take our last instant replay. Take about fifteen minutes to answer the questions on your worksheet. Notice there is an extra problem for those of you who finish early.

After you finish the instant replay, we will have a short discussion on "Training Others in Observational Skills", including guidelines which will help workshop trainers in presenting the same kinds of presentations and activities you have participated in at this workshop.

Refer to Instant Replay Keys
for Answers

Discuss Instant Replay Answers
and Answer Questions

TRANSPARENCIES FOR OBA

OBSERVATION SKILLS WORKSHOP OBJECTIVES

1. Write a 4 part definition of the behavior to be observed—
   - a.) Who?
   - b.) What?
   - c.) When?
   - d.) Where?
2. Recognize and select appropriate observational procedures—
   - a.) Anecdotal records
   - b.) Direct measurement of permanent products
   - c.) Frequency counting or event recording
   - d.) Duration
   - e.) Internal recording
   - f.) Time sampling
3. Chart and Record behavior—
   - a.) Baselines
   - b.) AB designs
   - c.) ABAB designs
   - d.) Multiple baseline designs
   - e.) Observation of peers
   - f.) Observation of teacher behavior
   - g.) Reliability checks
4. Training others in observation—
   - a.) Helping teachers select a measurement procedure
   - b.) Reliability checks
   - c.) Using observation results

OBA/T1

Define and Pinpoint Behavior Observable and Measureable Behavior

Answer Questions:

Who: Robbie, third grade, boy

What: Study Behavior

Orientation toward assigned course material, lecturing teacher, reciting classmates, class participation by teacher request.

When: 30 min. observation sessions during a.m. math class from 9:00-9:30

Where: 3rd grade classroom: Natalie Barge

Measuring Behavior

A. Anecdotal Records — Write down everything as it occurs.

1. **Advantages**
   - a. Good to get classes of behaviors of concern.
   - b. Get an idea of the sequence of behavior.
2. **Disadvantages**
   - a. Requires continuous observation
   - b. Impossible to record everything
   - c. Imprecise

Direct Measurement of Products

(Where behavior leaves something that can be observed and measured)

Examples:
1. Written answers to math problems
2. Spelling words
3. Chalkboard erased
4. Units assembled
5. Jobs completed
6. Cigarettes smoked
7. Grades in a grade book

Advantages:
- a) Readily available
- b) Can be re-examined
- c) Very reliable
- d) Doesn't interfere with teaching

Materials: Record in grade book, make a chart, write on calendar.

T-5

Frequency Count or Event Recording

(Recording or Tallying every time a target behavior occurs)

Examples:

1. Arguments
2. Out of seat
3. Fights
4. Tantrums
5. Correctly articulated sounds

Use:

Pencil and paper tally; masking tape on desk or wrist; golf counter

Advantages:

a) Teachers can continue to teach
b) Easy to put in numerical terms

Disadvantages:

a) Not always as reliable as measurement of permanent product

OBA/TS

Duration and Latency

(How long a behavior lasts or How long from the beginning to end of a behavior.)

Examples:

1. Time to complete an assignment
2. Time spent getting into seat after the bell rings.
3. Time spent looking out the window
4. Minutes spent going to the bathroom.

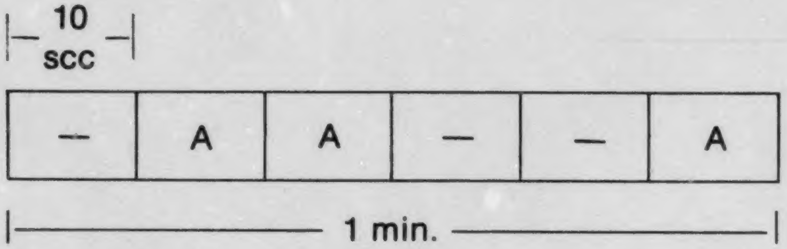
Use: Stop watch; wall clock

Advantages: Duration and/or later more important for some behaviors than frequency e.g. thumbsucking

Disadvantage: May require almost continuous monitoring.

Interval Recording

(Recording whether or not a behavior occurs in a given interval of time.)



10 scc

—	A	A	—	—	A

1 min.

Examples:

1. Attending
2. Crying
3. Out of seat
4. Talking out

Use:

Recording Sheet
Stop Watch; clock; audio beeper

Advantages:

Can record more than 1 behavior to establish relationships

Disadvantages:

Often requires continuous observation; relatively imprecise if intervals are long.

OBA/T7

T-8

Time Sampling

(Differs from interval recording in that it does not require continuous observation.)

The observer records behavior only at the **end** of a time interval.

EX. 30 min. obs. period — into 10, 3 min. intervals

3 mins.

A	A	N	N	N	N	N	N	A	A

= 30 mins.

Behavior
A = Attending
N = Non-attending

Student was attending 4 out of 10 (40%) of the time intervals sampled to see if s/he was working.

Use: Recording Sheet

Examples: % of times hearing aide worn (sample 6 x's per day) study behavior

Advantages: does not require observer's continuous attention

Disadvantages: Not used if behavior is not ongoing or should be ongoing.

OBA/T8

Computing Reliability

(Per Cent of Agreement)

1. When using permanent product, frequency count, duration — Divide lesser score by greater.

$$20 \quad 18 \qquad 20\overline{)18.00}^{\,.90} \quad \text{X} \quad 100 = 90\%$$

OBA/T9

2. When using interval or time sample —

A	A	A	—	—	—	—	A	A	—
—	A	A	—	—	A	—	A	A	—

$$10\overline{)8.}^{\,.80\%}$$

— Divide agreements by disagreements + agreements.

$$30\overline{)24.0}^{\,.80} \quad \text{X} \quad 100 = 80\%$$

T-10

Problems on Reliability

1. See Worksheet
2. Other

Compare the teacher and psychologist's time sample records of attending behavior.

What is the percent of agreement?

Teacher's	A	A	—	A	—	—	—	A	A	A
Psychologist's	A	A	—	—	—	A	—	A	A	—

A = Attending
— = Non-attending

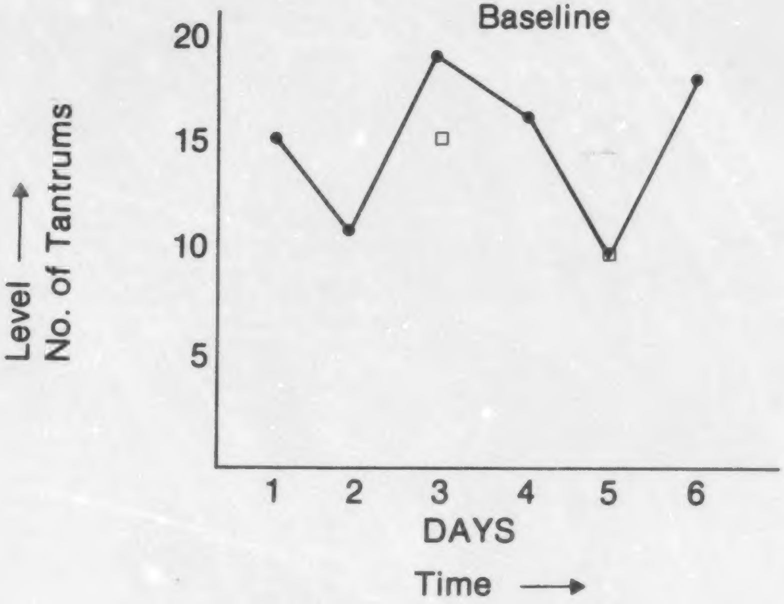
$$7/10 \qquad \begin{array}{r} .70 \\ 10\overline{)7.0} \end{array} \qquad 70\%$$

OBA/T10

OBA/T11

Charting Behavior

Baseline: A record of behavior before intervention
(Tells the level of behavior of concern)



— Vertical axis = Level of behavior
— Horizontal axis = Time
— Reliability checks ☐

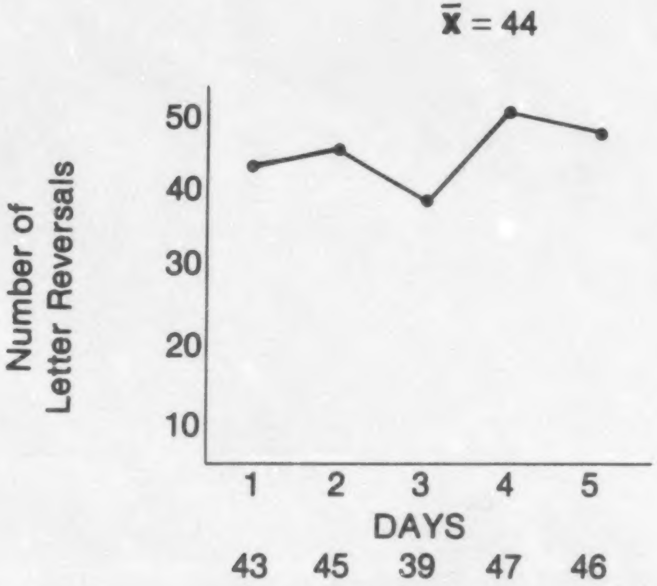
Computing Means

Find mean (average) by dividing record for each session by the number of sessions.

Example:

$$\begin{array}{r} 43 \\ 45 \\ 39 \\ 47 \\ 46 \\ \hline 220 \end{array} \qquad \begin{array}{r} 44 \\ 5\overline{)220} \end{array}$$

OBA/T12

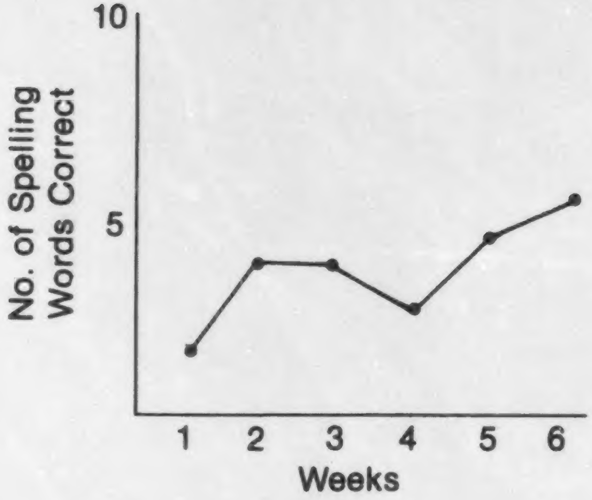


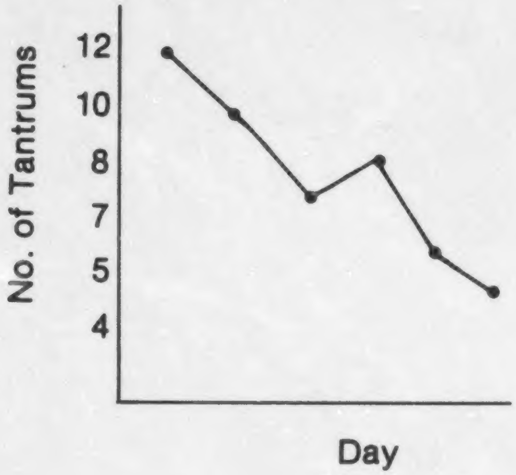
Baselines

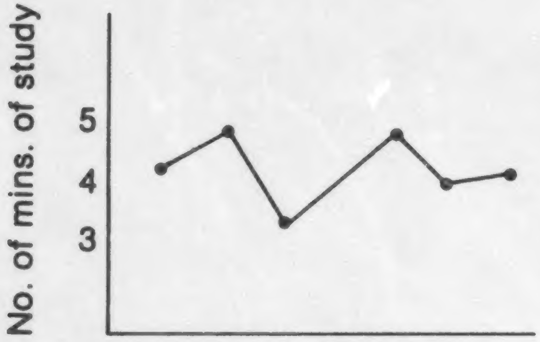
T-13

Ascending, Descending, Stable

1. Spelling words correct — 2, 4, 4, 3, 5, 6
2. Tantrums — 12, 10, 7, 8, 5, 4
3. Min. of study — 4, 5, 3, 4, 5, 4, 4

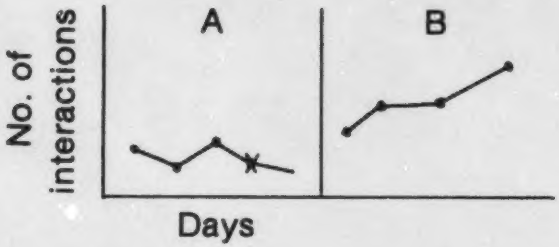




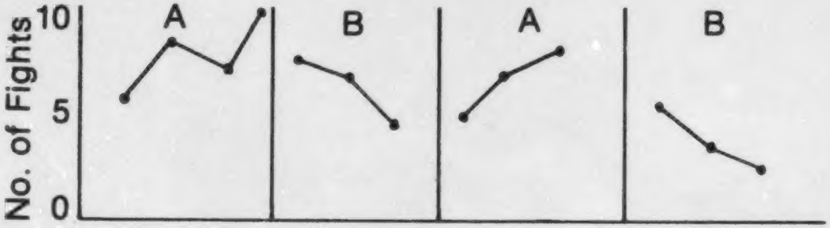


Assessment of Intervention Procedures

A. The **AB** Design

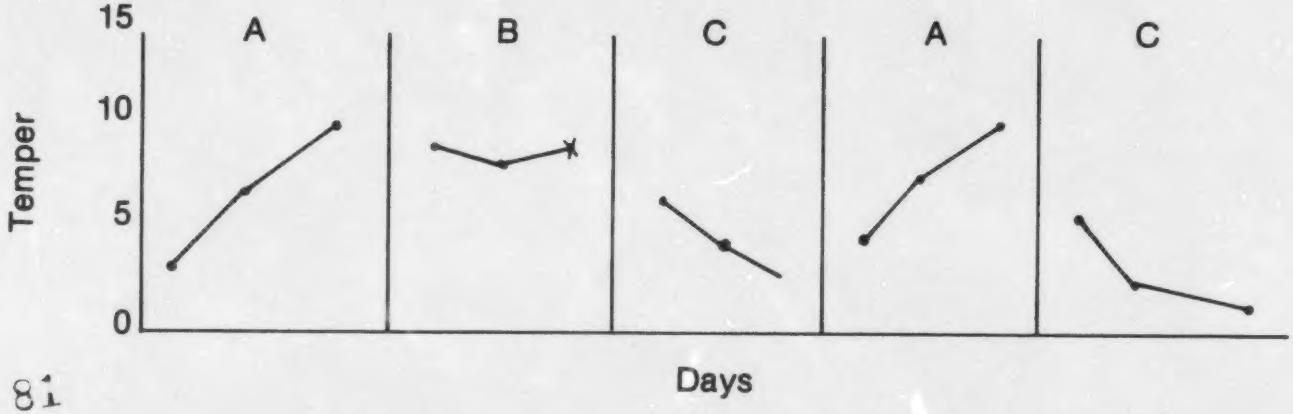


B. The **ABAB** Design



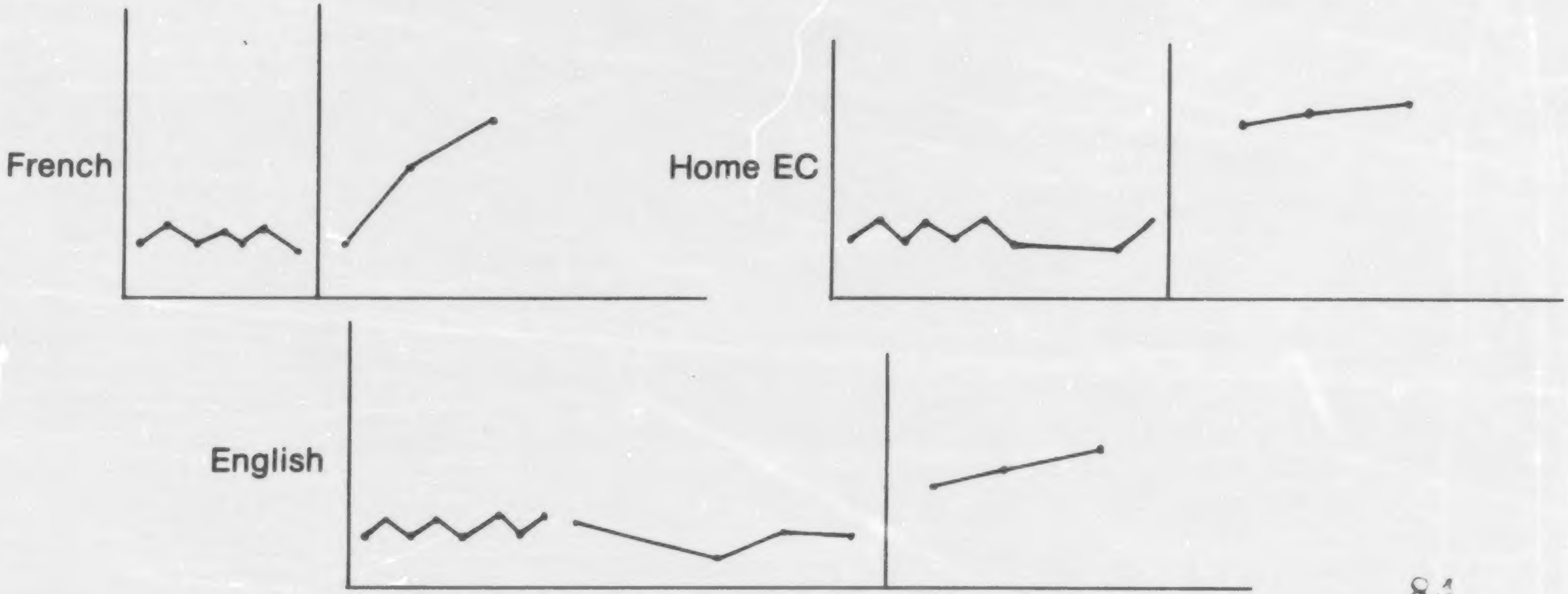
OBA/T14

C. The **ABCAC** Design



Multiple Baseline Designs

1) Compare effects **across behavior**
2) Compare effects **across subject**
3) Compare effects **across settings**

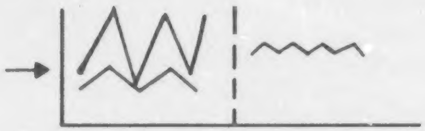


Advantage — No reversal necessary

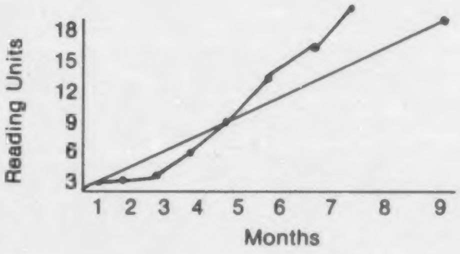
Obtaining Comparative Data

Establishing a goal or minimum objectives

A. Comparison to baseline

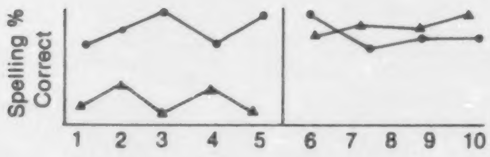


B. Objective standards (minimum obj.)



OBA/T16

C. Observation of Peers



D. Observation of Teacher

Student	A	A	A	—	—	—	A	A	A	A
Teacher	X	—	X	—	—	—	X	—	—	—

WORKBOOK FOR OBA

WORKSHEETS AND INSTANT REPLAYS
FOR
OBSERVATION SKILLS WORKSHOP

1. DEFINING (PINPOINTING) BEHAVIOR (USING THE FOUR W'S)

A. THE FIRST STEP IN OBSERVING AND MEASURING BEHAVIOR IS TO DEFINE IT: A GOOD DEFINITION ANSWERS WHO? WHAT? WHEN? AND WHERE?

1) WHO?	WHOSE BEHAVIOR IS BEING RECORDED?
2.) WHAT?	WHAT SPECIFIC BEHAVIOR OR BEHAVIORS WILL BE RECORDED?
3.) WHEN?	WHEN WILL THE BEHAVIOR BE RECORDED?
4.) WHERE?	WHERE WILL THE BEHAVIOR BE RECORDED?

B. A SAMPLE BEHAVIOR PROBLEM: SIM HOUSTON, A FIFTH GRADER, WAS FREQUENTLY ABSENT FROM CLASS BUT A PHYSICIANS REPORT INDICATED THAT HE WAS IN GOOD HEALTH. WHEN SIM CAME TO SCHOOL HE OFTEN COMPLAINED TO HIS TEACHER ABOUT VARIOUS "ACHES AND PAINS." SIM SPENT MORE TIME CONCERNED WITH HIS HEALTH THAN WITH HIS LESSONS. PINPOINT THE TARGET BEHAVIOR AND SPECIFICALLY DEFINE IT BY ANSWERING THE 4 "W" QUESTIONS.

C. DESCRIBE YOUR OWN PROBLEM AND DEFINE IT USING THE FOUR "W" QUESTIONS:

D. ACTIVITY 1-- PRACTICE IN DEFINING BEHAVIOR

USE THE SPACE BELOW TO RECORD YOUR OBSERVATIONS FOR "NOW YOU SEE IT AND NOW YOU DON'T-- HANDRAISING: A DEMONSTRATION IN BEHAVIOR DEFINITION"

DEFINING BEHAVIOR -- OPTIONAL INSTANT REPLAY

IN EACH OF THE SITUATIONS OUTLINED BELOW, PINPOINT A BEHAVIOR AND WRITE A FOUR PART DEFINITION USING WHO?, WHAT?, WHEN? AND WHERE?:

1. AL COULTER IS A THIRD GRADE BOY WHO HAS BEEN REFERRED BY HIS TEACHER, BECAUSE HE IS HYPERACTIVE AND FAILS TO COMPLETE HIS WRITTEN ASSIGNMENTS. ACCORDING TO HIS TEACHER MS. JONES, AL NEVER STAYS IN HIS SEAT, HE BOTHERS OTHER STUDENTS AND RARELY FINISHES HIS ASSIGNMENTS EVEN THOUGH SHE FEELS HE IS CAPABLE OF DOING THE WORK.

   SUGGEST A BEHAVIOR OF CONCERN THAT THE TEACHER COULD MEASURE

   SUGGEST A SCIENTIFIC DEFINITION FOR THAT BEHAVIOR:

   1.
   2.
   3.
   4.

2. MS.SMITH IS A SECOND GRADE TEACHER WHO HAS REFERRED SALLY SLIP BECAUSE OF HER "AGGRESSIVENESS AND HOSTILITY" TOWARD HER CLASSMATES. AFTER QUESTIONING MS. SMITH, YOU LEARN THAT SALLY FREQUENTLY HITS OR KICKS HER CLASSMATES ON THE PLAYGROUND, AND THAT SHE ALSO CURSES AND SCREAMS IF SHE FEELS OFFENDED.

   HOW WOULD YOU DEFINE AGGRESSION AND HOSTILITY ON THE PLAYGROUND AS IT RELATES TO WHAT YOU KNOW ABOUT SALLY'S BEHAVIOR?

2. MEASURING BEHAVIOR (RECORDING PROCEDURES)

A. ANCEDOTAL RECORDS (WRITING DOWN EVERYTHING AS IT OCCURS)

1.) ADVANTAGES--

2.) DISADVANTAGES--

B. DIRECT MEASUREMENT OF PRODUCTS (MEASURING PRODUCTS WHICH ARE A RESULT OF THE BEHAVIOR WHERE BEHAVIOR LEAVES SOMETHING THAT CAN BE OBSERVED AND MEASURED I. E. WRITTEN RESULTS OF A SPELLING TEST)

1.) EXAMPLES--

2.) RECORDING MATERIALS--

3.) ADVANTAGES--

4.) DISADVANTAGES--

C. FREQUENCY COUNTING OR EVENT RECORDING (RECORDING EVERY TIME A PINPOINTED BEHAVIOR OCCURS)

1.) EXAMPLES--

2.) RECORDING MATERIALS--

3.) ADVANTAGES--

4.) DISADVANTAGES--

D. DURATION (MEASURING HOW LONG A BEHAVIOR LASTS FROM BEGINNING TO END OF ITS OCCURENCE)

1.) EXAMPLES--

2.) RECORDING MATERIALS--

3.) ADVANTAGES--

4.) DISADVANTAGES--

E. INTERVAL RECORDING (RECORDING WHETHER OR NOT A BEHAVIOR OCCURS IN A GIVEN TIME PERIOD)

1.) EXAMPLES--

2.) RECORDING MATERIALS--

3.) ADVANTAGES--

4.) DISADVANTAGES--

F. TIME SAMPLING (RECORDING WHETHER OR NOT A BEHAVIOR IS OCCURRING AT THE END OF GIVEN INTERVALS)

1.) EXAMPLES--

2.) RECORDING MATERIALS--

3.) ADVANTAGES--

4.) DISADVANTAGES--

3. RELIABILITY (THE DEGREE OF AGREEMENT IN THE RECORDS OF INDEPENDENT OBSERVERS USING THE SAME MEASUREMENT SYSTEM)

A. COMPARISON OF RECORDS BY DIVIDING THE LESSER BY THE GREATER X 100 = % OF AGREEMENT (PERMANENT PRODUCTS, DURATION, FREQUENCY COUNTS)

1.) EXAMPLES--

B. DIVIDING THE NUMBER OF AGREEMENTS BY THE NUMBER OF AGREEMENTS PLUS DISAGREEMENTS X 100 = % OF AGREEMENT (INTERVAL OR TIME SAMPLING RECORDING)

1.) EXAMPLES--

C. ACCEPTABLE RELIABILITY STANDARDS.

These materials are based on R. Vance Hall, Managing Behavior Series Part I: Observation and Measurement of Behavior, H & H Enterprises, Inc., Box 1070, Lawrence, Kansas, 1977.

D. IF THE SPEECH THERAPIST RECORDED THAT FRITZ SKINNER ARTICULATED 9 "S" SOUNDS CORRECTLY AND THE SCHOOL PSYCHOLOGIST RECORDED 10, WHAT IS THE PER CENT OF AGREEMENT?

COLLECTING DATA & MEASURING BEHAVIOR

OPTIONAL INSTANT REPLAY

1. OF THE MEASUREMENT TECHNIQUES, THREE ARE MORE USEFUL TO TEACHERS AND CLASSROOM SETTINGS THAN OTHERS. SELECT THE THREE MOST USEFUL TO TEACHERS AND BRIEFLY EXPLAIN WHY:

____ 1.) INTERVAL RECORDING
____ 2.) ANECDOTAL RECORDS
____ 3.) TIME SAMPLING
____ 4.) DURATION
____ 5.) FREQUENCY COUNT OR EVENT RECORDING
____ 6.) DIRECT MEASUREMENT OF PERMANENT PRODUCTS

2. IN EACH OF THE SITUATIONS BELOW, SUGGEST A MEASUREMENT PROCEDURE FOR THE BEHAVIOR. IN A PREVIOUS INSTANT REPLAY YOU DEFINED THE BEHAVIOR TO BE MEASURED.

A. AL COULTER WAS A THIRD GRADE BOY WHO HAD BEEN REFERRED BY HIS TEACHER BECAUSE HE WAS HYPERACTIVE AND FAILED TO COMPLETE ASSIGNMENTS. ACCORDING TO HIS TEACHER, AL NEVER WAS IN HIS SEAT, HE BOTHERED OTHER CHILDREN AND RARELY FINISHED HIS ASSIGNMENTS EVEN THOUGH SHE FELT HE WAS CAPABLE OF DOING THE WORK.

MEASUREMENT PROCEDURE--

2. B. MS SMITH IS A SECOND GRADE TEACHER WHO HAS REFERRED SALLY SLIP BECAUSE OF HER "AGGRESSIVENESS AND HOSTILITY" TOWARD HER CLASSMATES. AFTER QUESTIONING MS. SMITH YOU LEARN THAT SALLY FREQUENTLY HITS OR KICKS HER CLASSMATES ON THE PLAYGROUND, AND THAT SHE ALSO CURSES AND SCREAMS IF SHE FEELS OFFENDED.

WHAT RECORDING PROCEDURE WOULD YOU SUGGEST THE TEACHER USE TO RECORD HOSTILITY AND AGGRESSION? (REFER BACK TO YOUR DEFINITION OF THE BEHAVIOR TO BE MEASURED FOR A START).

3. JANE TINNEY, A SIXTH GRADE TEACHER, DOESN'T HAVE TIME TO WATCH BILL BANG CLOSELY BUT YOU'D LIKE TO HAVE HER MAKE A RECORD OF HOW MUCH TIME HE SPENDS STUDYING. SUGGEST HOW SHE COULD USE TIME SAMPLING TO RECORD STUDY BEHAVIOR AFTER IF HAD BEEN PINPOINTED. SHOW WHAT A RECORDING SHEET FOR A 50 MINUTE MATH PERIOD MIGHT LOOK LIKE.

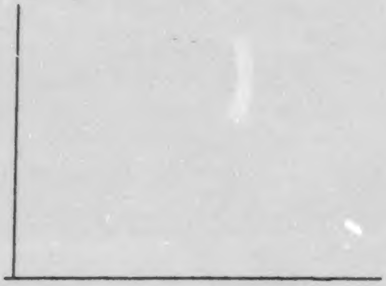
WORKSHEETS FOR OBSERVATION SKILLS WORKSHOP

(Interpreting Data Sessions)

4. Charting Behavior

a. Baselines (a record of behavior before intervention, depicts the level of behavior of concern)

1) level of behavior

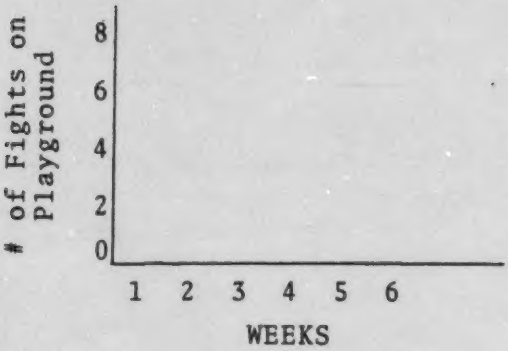


2) time dimension

3) reliability checks - how do you indicate a check?

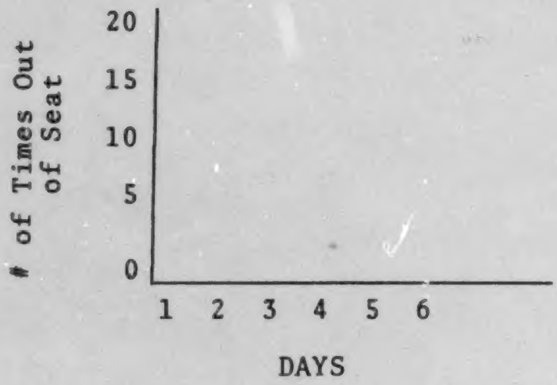
4) ascending

2,3,5,4,6
(5) (6)



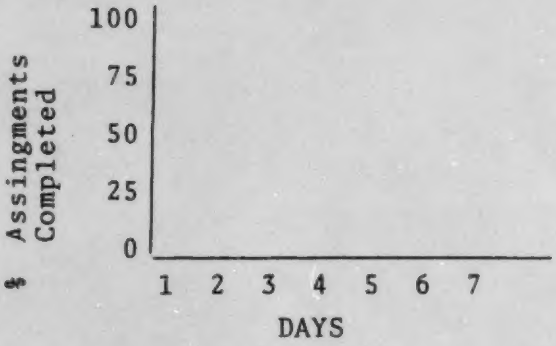
5) descending

20,17,18,13,8
(16) (8)

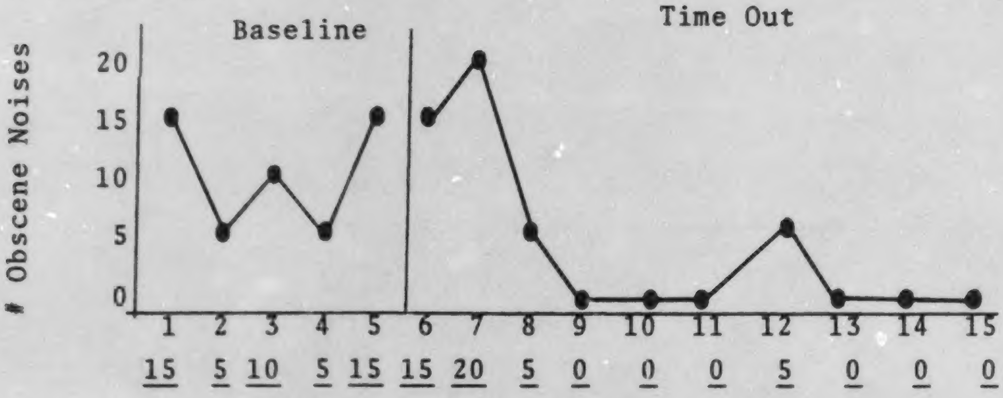


6) stable

25,30,25,25,30
(25)



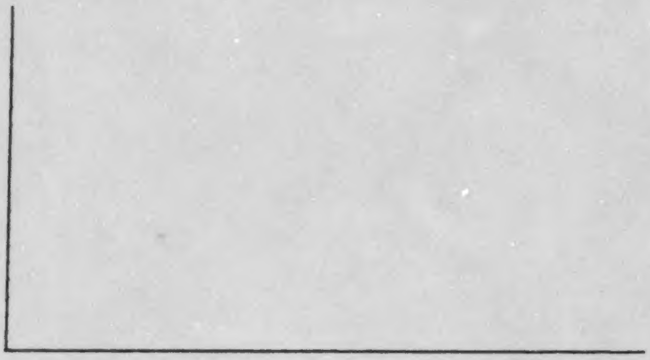
b. Computing means



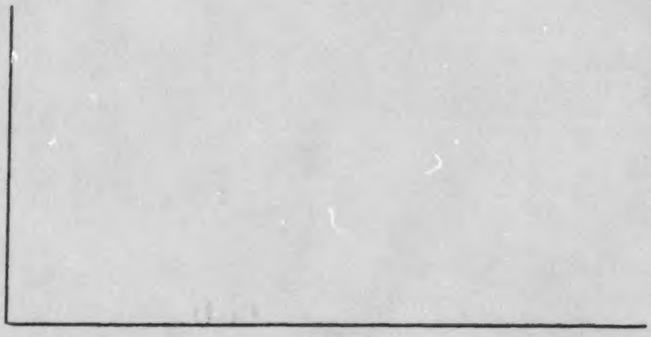
5. Assessment of Intervention Procedures

a. AB designs (The favorite)

b. ABAB designs, reversal (The scientific approach)



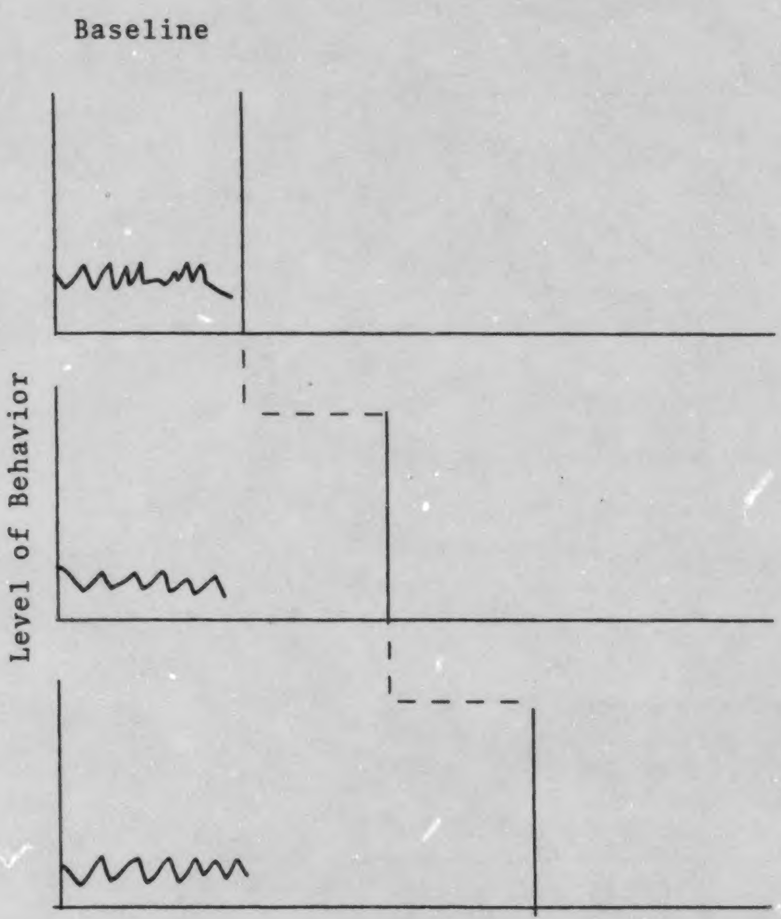
c. ABC(A) designs



d. Multiple baseline designs

Special Uses:

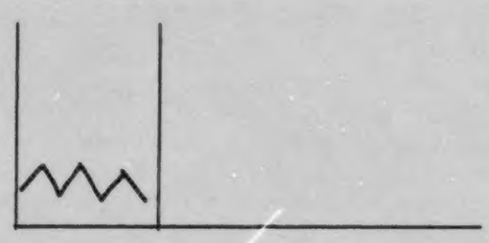
1) comparing effects across behaviors
2) comparing effects across students or subjects
3) comparing effects across settings such as different classrooms


Baseline
Level of Behavior

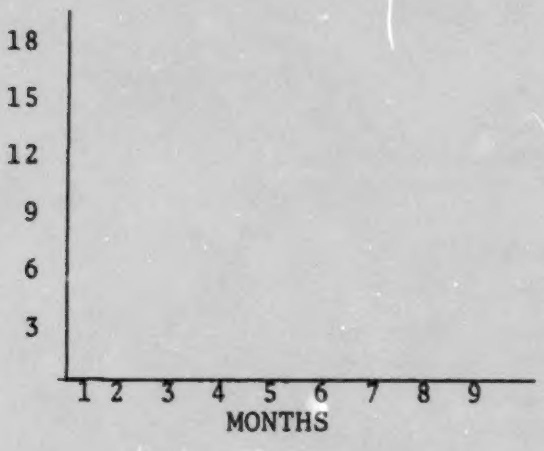
6. Obtaining Comparative Data

a. Establishing a goal or minimum objective

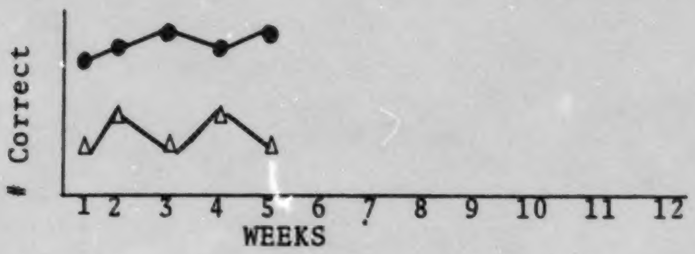
1) comparison to baseline (set at highest level of baseline)



2) objective standards (e.g. grade level)



3) observation of peers



4) observation of teacher

Student												
Teacher												

SELECTING APPROPRIATE MEASUREMENT PROCEDURES AND RECORDING TECHNIQUES: AN OPTIONAL INSTANT REPLAY

Marilyn Ball, a 6th grader, was referred to the school psychologist, Vince Hill, because she "never" handed in class assignments. During study periods, according to the teacher, she talked to classmates. Her parents had been unable to get her to study at home. Vince, being a responsive psychologist, got the teacher to record the percentage of assignments Marilyn turned in on time. The record over a one week period was 1/5, 3/5, 1/4, 0/6, 1/5. On the third day (Thursday) the teacher had a reliable student, Alan, check how many papers Marilyn handed in. He wrote down Marilyn handed in one out of four. Then Vince and the teacher set up an appointment with the parents in which a home-school report card system backed by privileges such as T.V. and free time were contingent on handing in assignments. In the next week the teacher record of assignments completed was, 0/4, 2/5, 4/5, 4/4, 6/6. On the last day Alan also recorded 6 out of 6 assignments completed.

1. Graph these data below:

____

label both axes

separate the phases of the study

label both phases of the study

indicate reliability checks

what was the baseline mean? ______________

2. If the teacher and parents did a reversal (ABAB) how would the data probably look? (just sketch in)

3. According to these preliminary results what would a reasonable goal seem to be for Marilyn as far as handing in completed assignments? ________________

____

Extra Credit for Fast Workers

4. Graph these data:

A teacher records the number of times a withdrawn child volunteers in social studies class. The record shows 0, 1, 0, 0, 1, 2, 3.

____

What kind of baseline is this? ________________________

Would you recommend intervention at this time? ________

RESOURCE GUIDE FOR OBA

RESOURCE MATERIALS

Introduction

There are over 1,000 references on observation skills as applied to school, home, and community settings. Many professionals who observe have developed their own unique recording formats, behavioral definitions, and manuals. With so many references available, it is impossible to present them all in this resource section. Instead, we have chosen only a few, many of which complement each other. The focus in selecting references has been to compile a brief list of sources for further information which would be useful to a trainer. Because the initial material was prepared by R. Vance and Marilyn Hall, this bibliography reflects a bias toward observation as they have described it.

References

Cartwright, C. A. & Cartwright, G. P. *Developing Observation Skills*. New York: McGraw Hill, 1974.

This is an excellent basic text for teachers. The authors have combined clear language, humor (including amusing cartoon drawings) and simple organization to make a readable relatively short book (168 pages). Methods of observation, behavior tallying, checklists, anecdotal records, and additional emphasis on instructional environments make this book worthwhile for school personnel. Although very restricted in scope the book is one of the best for a beginning observer in the classroom.

Deno, S. L. *A Direct Approach to Measuring Classroom Behavior: Procedures and Application*. Minneapolis: Institute for Research on Learning Disabilities, University of Minnesota, 1979.

Deno presents a simple recording system for observing behavior in the classroom. Using five categories (noise, out of place, physical contact or destruction, off task, and other) he describes a frequency counting system, procedures for interobserver reliability and validity/utility of the system. A sample case is presented to illustrate not only assessment but intervention. A sample recording sheet is also included. Deno's article describes one approach or system for observing classroom behavior.

Hall, M. C. *Responsive Parenting*. Lawrence, KS: H & H Enterprises, Inc., 1978.

For training parents in behavioral observation this is an excellent introductory approach. Mirroring the materials developed for teachers by Vance Hall, a parent manual, leader's manual and program director's guide have been developed. There are study guides, definitions, short quizzes, etc., to make the training more meaningful. This would be helpful material for those who are responsible for training parents.

Hall, R. V. *Managing Behavior Series* (Nos. 1, 2, & 3). Lawrence, KS: H & H Enterprises, 1974.

This series of booklets is the best concise introduction to observation as it is presented in this module. Number 1 covers basic principles of measurement and different designs for intervening with behavior problems. Number 2 focuses on the basic principles of behavior modification including selecting reinforcers. Number 3 details examples of behavioral principles at home and at school. For a simple introduction, the Number 1 booklet is perhaps the best.

Haynes, S. N. *Principles of Behavioral Assessment*. New York: Gardner Press, Inc., 1978.

This book is a comprehensive introductory text to behavioral assessment. Some prior basic knowledge of learning theory and behavior therapy principles might be helpful but the book is written for an introductory graduate level course. Among the topics covered are methods of recording observations, reliability and inter-observer agreement, assessment in structured environments, self monitoring, as well as a number of case studies, including school, home, institutional, and marital problems. This book is most helpful in understanding the assumptions and basic principles of behavioral assessment.

Haynes, S. N. & Wilson, C. C. *Behavioral Assessment: Recent Advances in Methods, Concepts, and Applications*. San Francisco: Jossey Bass, 1979.

Haynes and Wilson have compiled a comprehensive reference for behavioral assessment. Sections focusing on observation include chapters on conceptual and methodological advances, observation in natural environments, observation in structured environments, and self monitoring. There are helpful tables listing recent applications of observation in school, home, and community settings. Coding systems for observation, use of participant observers, automated data recording, and other topics seldom covered elsewhere are discussed. This book is most applicable to school psychologists and other assessment personnel.

Jones, R. R., Reid, J. B., & Patterson, G. R. Naturalistic observation in clinical assessment. In P. McReynolds (Ed.). *Advances in Psychological Assessment* (Vol. III). San Francisco: Jossey Bass, 1977.

The authors discuss the feasibility of observing in naturalistic settings and provide a definition. A recording system (Behavioral Coding System—BCS) with a coding sheet is presented. The article focuses on this system including establishing reliability, reports of validity, etc., as the BCS has been used by the Social Learning Project in Oregon. This reference is helpful for those interested in a predetermined format for recording a large number of behaviors. The BCS was selected because it has been used both in the home and at school.

Lynch, W. W. Guidelines to the Use of Classroom Observation Instruments by School Psychologists. *School Psychology Monographs*, 1977, 3, 1, 1-22.

School psychologists often observe students for both eligibility and intervention programming purposes. Lynch sets a number of guidelines to follow (relevance, feasibility, reliability, validity, etc.). To illustrate each guideline he describes cases which reflect good and poor examples. The article may be helpful in introducing school psychologists to the topic of observation.

Sitko, M. C., Fink, A. H., & Gillespie, P. H. Utilizing Systematic Observation for Decision Making in School Psychology. *School Psychology Monograph*, 1977, 3, 1, 23-44.

These authors have focused on a flow chart organization for using observations as part of an assessment and intervention process. They present *in situ* observations (direct measurement in the classroom) as opposed to structured observations. Throughout their four stage process they incorporate other skills such as task analysis to make their model functional in the school setting. This should be helpful to those who are interested in alternative organized approaches to observation and how the observational data will be used.

Weinberg, R. A. & Wood F. H. (Eds.) *Observation of Pupils and Teachers in Mainstream and Special Education Settings: Alternative Strategies*. Reston, VA.: Council for Exceptional Children, 1975.

This compilation covers observation from interactive, ecological, ethological, and behaviorist perspectives. There are articles by Gump, Flanders, Hall, O'Leary, Deno, and others. Most helpful is an article by Deno entitled "Behavioral Approaches to Observations: Common Problems and Some Suggestions." The article by Hall, Hawkins, and Axelrod, "Measuring and Recording Student Behavior: A Behavior Analysis Approach" is an excellent summary of many of the skills presented in this module. The book also records a conference held at the University of Minnesota during which these papers were discussed.

INTERVIEW BASED ASSESSMENT (IBA)

By Robert Audette & W. Alan Coulter

USER'S GUIDE FOR IBA

USAGE SUMMARY

Rationale

The INTERVIEW BASED ASSESSMENT component is one of three non-test-based data collection procedures in the Non-Test-Based Assessment Package. Interviewing skills as a part of assessment can be used by school psychologists or other appraisal personnel with a wide variety of people:

1. Teachers
2. Parents
3. The referred student, when appropriate
4. Any person who has knowledge about a referred student's academic or behavioral skills in the school or home environments.

User

This workshop is designed primarily for school psychologists and, through them, other assessment personnel such as educational diagnosticians, counselors, vocational assessment personnal, and physicians, to give several examples. The primary workshop goal is to instruct the user in listening skills, designing and following a logical interview sequence, recording interview data, and appreciating the need to collect interview data from a variety of sources such as teachers, parents, and even students themselves. Interview data can be used as one part of an educational/behavioral evaluation for determining appropriate curricular and behavioral interventions.

This component can be presented either before, between, or after the other two components in the package. They are not designed to be sequential. It can also be used independently (i.e., without reference to the other two components). But when it is used either independently or prior to the other two, it should be preceded by the special Introduction and Overview component that is designed to prepare the user for all three of the components, taken separately or together.

Directions to Presenter

Although a script is presented, the presenter(s) should be familiar enough with the component content so that the script is not "read" to the participants. The session will be far more interesting if presenters make the workshop their own, modifying the script and examples to suit each individual presenter's style.

If the workshop needs to be shortened, the presenters should consider shortening the scripted presentation sections and placing greater emphasis on audience participation, modeling material and techniques, and behavioral rehearsal activities designed for each section.

INTERVIEW BASED ASSESSMENT WORKSHOP OBJECTIVES

Upon completion of the Interview Based Assessment workshop, the participants will be able to:

1. Conduct effective interviews in a variety of settings such as school or home environments.
2. Record interview data useful for generating questions for further assessment.
3. Adapt the interview, if necessary, to investigate problem areas or specific concerns about a referred student.
4. Identify how interview data fits into a comprehensive assessment sequence.

To meet these objectives, the participant will:

—complete the worksheets for the interview based assessment workshop.

—participate in the simulation activities:

Activity 1. to provide practice in referral interviewing of parents, teachers, and students (when appropriate).

Activity 2. to provide practice in developing eligibility questions from measurable elements in the definition of a handicap.

—meet 90% criterion on written instant replays concerning information and application of the workshop's content.

CONTENT OUTLINE

I. OVERVIEW
  A. General Purpose of Interview Based Assessment
    1. Interviewing for assessment decision making.
    2. Introductory case study.
  B. The Referral to Placement Process
    1. Referral stage
    2. Pre-assessment stage
    3. Assessment stage
    4. I.E.P. design stage
    5. Placement stage

II. INTRODUCTION TO INTERVIEWING SKILLS
  A. Definition of Interviewing for This Workshop.
  B. Three Major Components of Interviewing.
    1. Form
    2. Content
    3. Interpersonal relationship
  C. Interview Format
    1. Unstructured to structured continuum
    2. Determining assessment questions that are of concern to interviewers.
    3. Collecting information to answer referral questions.

III. SECONDARY ASPECTS OF INTERVIEWS FOR ASSESSMENT DECISION MAKING
  A. Provision of Information to Others
  B. Assistance to Others in Articulating their Ideas and Concerns
  C. Persuasion of Others
  D. Teaching of Others
  E. Providing Emotional Support to Others
  F. Confrontation with Others

IV. MAJOR COMPONENTS OF EFFECTIVE INTERVIEWS
  A. Interpersonal Relationships
    1. Rapport
    2. Empathy
    3. Reinforcement
    4. Clear communication
    5. Accurate recording
    6. The first five minutes
  B. Listening Skills
  C. Assumptions of an Assessment Interview

D. Four Classes of Questions
    1. Interview questions
    2. Assessment questions
    3. Decision questions
    4. Eligibility questions
E. Types of questions
    1. Who?
    2. What is it?
    3. What is happening?
    4. Why?
    5. How?
    6. When?
    7. Where?
F. Sources of Information for Interview Data

V. RELIABILITY AND VALIDITY OF INTERVIEW INFORMATION
    A. Reliability Factors
    B. Validity Factors
    C. A Rough Check for Reliability/Validity

VI. COLLECTING INTERVIEW DATA
    A. Referral Stage
    B. Pre-Assessment Stage
    C. Assessment Stage
    D. General Referral Questions for Teachers
    E. Follow-up Questions for Teacher-noted Concerns
    F. General Referral Questions for Parents
    G. Follow-up Questions for Parents

VII. ANALYZING INTERVIEW DATA
    A. Referral Stage Interviews
        1. Products of referral stage interviews
        2. Referral interview effectiveness factors
    B. Pre-Assessment Conference Effectiveness Factors
    C. Characteristics of Good Assessment Questions
    D. Assessment Interviewing
    E. Assessment Interview Effectiveness Factors
    F. Eligibility Questions

VIII. SUMMARY

COMPONENT LESSON PLAN

Materials

1. Worksheets and Instant Replays for each participant.
2. Transparencies and Grease Pencil(s)
3. Overhead Projector and Screen
4. Newsprint or poster paper (24" × 36") and waterbase marking pens.

Sequence of Events

	Time Estimate (in minutes)
1. Welcome and Introduction	5-10
2. Introduction to Interview Based Assessment and Instant Replay #1	105-110
3. Referral Interviewing and Activity #1: Interviewing Triads (sets 1 & 2)	80
4. Generating Assessment Questions and conducting a Preassessment Conference (Note: Interviewing Triads Set 3 may precede this section if time permits)	80
5. Developing Eligibility Questions (Discussion and Questions)	80

SCRIPT FOR IBA

PRESENTATION: INTRODUCTION TO INTERVIEW BASED ASSESSMENT

The introductory section of this presentation should be personalized by you, the presenter, so that the participants will know WHO YOU ARE and WHY INTERVIEW BASED ASSESSMENT IS IMPORTANT TO YOU. The script is presented in a word for word fashion, but should, of course be adapted to suit your personality as the presenter.

Think of the last time you were interviewed by someone. Almost everyone has experienced an interview as an interviewee, or the person to whom questions are directed. Interviews are used in many social situations for a variety of information gathering purposes. Because interviews are so common and widely used, there are many definitions of an interview. What is a definition of interviewing that would apply to assessment in the public schools? On the first page of your participant workbook (W-1) write a definition of interviewing as you currently know it.

Allow participants 3 to 5 minutes to write their own definition. At the close of the time period, continue. . . . .

Would someone share his or her definition of interviewing?

At this point pause for responses from the participants. As each definition is being read, select key words from the definitions and write these words on the chalk board. From each definition select DIFFERENT words from those already listed on the chalk board. For example, if someone says "Interviewing is a situation between two or more people where one person is seeking information and the other person is delivering information"; you might write "seeking information." Another person might add "An interview can be a therapeutic encounter where a person discovers what is really concerning them". You could list "therapeutic" and "concerns."

When you feel you have sufficiently canvassed the participants for different definitions, thank them and comment on the content you have written on the chalk board. Complete your comments by showing Transparency 1 and reading it to the participants.

SHOW TRANSPARENCY 1

Notice that this premise for interview based assessment highlights two important aspects of assessment: 1) determining the questions to be answered and 2) discovering the situations which make the questions necessary. As we develop a definition for interviewing during this workshop it will be important to keep these two points in mind.

Now let's consider an instance when an interview could have been used in assessment. While this might seem like an extreme situation, it is a true story.

A 6-year old boy entered school as a first grader. After several weeks of sincere and kindly effort, the teacher was unable to elicit any speech from the child. Consultation with the school psychologist and the speech therapist produced neither speech not an understanding of the silence. Finally, a consultant psychiatrist who specialized in working with autistic children was employed to assist in diagnosing the problem. After considerable observation and testing, the psychiatrist concluded that the child was indeed "autistic" and could best be served in a separate facility for autistic children in a nearby community. It was left to the social worker to obtain the cooperation of the child's mother. It was anticipated that her cooperation would not be easily obtained. There had been a history of confrontation and poor communication with this woman when her three older children had attended school. The family was poor and the mother was rearing the children alone. She could neither read nor write. She had not been previously consulted about the child's lack of speech because it was believed that she would not have any information to contribute.

When the social worker came to the home to present an I.E.P. calling for placement in the special school, the mother refused to sign the form. As predicted, she obviously was not capable of understanding the child's problems. The mother asked the social worker to get off her property.

On the following day, without any warning, the child's mother came to the school. As she stood in the doorway of her child's classroom she observed the teacher interacting with her son by asking him to shake his head when she pointed to a certain color. The child merely stared at the teacher. After watching this one-sided effort at communication for a few minutes, the mother strode to her child's side and said, "Jeffrey, you talk to the lady." There was a long moment of silence until the child said, "Yes, ma'am."

SHOW TRANSPARENCY 2

For a variety of reasons, the mother had never been asked whether the child could talk. While this is an extreme example, it is nevertheless a true story and exemplifies the rationale for using interviews in the assessment of children's needs.

The fundamental premise of interview procedures in non-test-based assessment is that someone has all or part of the information needed to answer a question. Would anyone here like to share with us an example from your experience of how interviewing was used or might have been helpful if it had been used?

Pause for participant contributions. If you have additional examples, you might want to add them. After a few examples have been offered, or if no examples are shared, proceed.

Interview based assessment can be best conceived within the broad context of the referral to placement process. While there are many ways in which the total appraisal process can be carried out there are a minimum of steps or stages which characterize the process. Interviewing can be used at several stages within the process.

CAUTION: The five stages to be described may have different names and more steps than presented here. Modify the following presentation to meet local policies. When you are unsure, tell the audience that this is a general description and ask for differences between what is presented and local approaches. Terms are often different for the same essential step.

In general, don't let confusion over terms impede understanding of the scope of the referral to placement process.

SHOW TRANSPARENCY 3

The stages of the referral to placement process include referral, pre-assessment, assessment, I.E.P. design, and placement. At each stage, data must be considered and decisions made. The referral stage indicates the involvement of school personnel other than the student's classroom teacher(s) as well as the parent. Pre-assessment is best described as a preparatory stage in which all members of the assessment team plan a truly individualized assessment. Logically, in the assessment stage the team members implement the plan and answer the assessment questions developed during the pre-assessment stage. The design of the I.E.P., based on the results of the assessment, comes next. Once the I.E.P. is detailed the decision for placement follows. Is this the sequence with which you are familiar?

Wait for comments. Clarification is usually necessary. Remember that questions (examples) for each stage are next in the presentation.

More specifically, each stage requires decisions and data on which to base those decisions. As we examine each stage, consider the role that interviewing might play in the process.

Most important to the referral stage is asking and answering the question "Is there a problem?"

SHOW TRANSPARENCY 4

If you want to jot down some of these questions, space is provided on page 2 of your worksheets. Other questions include: What is the problem in descriptive terms? What assistance is needed to define the problem? To resolve it? Should the current problem continue intact? Should other nonspecial education be utilized? Should assessment for potential special education assistance be requested?

What other questions assist in making decisions at this stage?

Pause for comments and give participants time enough to copy the information from the transparency if they wish.

If the general decision at the referral stage is to collect more specific assessment data, then the pre-assessment stage will follow.

SHOW TRANSPARENCY 5

At the pre-assessment stage, decisions are based on the nature of the referral problem(s) and the deliberations of a multidisciplinary assessment team. The decisions to be made during an assessment are based on key questions developed during this pre-assessment stage. What are the assessment questions? We will discuss the nature of assessment questions in more detail later. What are the priorities among the questions? How can these questions be answered? Which assessment procedures are most appropriate under specific circumstances? Who can carry out these procedures? How will assessment results and recommendations be communicated? Are there other questions which would be important prior to the initiation of assessment?

Pause for comment and questions. Often pre-assessment provokes a series of questions as to who is responsible for pre-assessment, and when exactly does it occur. Emphasize that much of interview based assessment pertains to pre-assessment and will be covered during the workshop.

Pre-assessment is designed to individually and precisely tailor assessment to a student. This process avoids the shortcomings in the use of "standard battery" and exemplifies protection in evaluation procedures. Following the completion of the pre-assessment stage, assessment occurs.

SHOW TRANSPARENCY 6

The decisions which comprise assessment are a consequence of pre-assessment. What are the answers to the assessment questions? What eligibility questions should be addressed? What other assessment procedures should be used to answer any remaining or resulting questions? What other information is available which may assist in determining the child's educational and related service needs? What about other key questions at this stage?

Pause for possible comment and give participants time to copy the questions if they wish.

SHOW TRANSPARENCY 7

When we have collected sufficient assessment information about the student we are ready to meet to develop the I.E.P. What are appropriate goals and objectives for the student, based on answers to the assessment questions? What are appropriate methods, materials, environments, and staffing ratios for meeting these goals and objectives? What are the eligibility factors which can be utilized to provide an appropriate program? If all or part of the recommended program is outside regular education, what must occur for the child to return to a regular class setting?

What are the criteria for determining success of the proposed program? What are the staff development implications of this I.E.P.?

Those are just a few of the many questions. Would you like to add any others?

After developing the I.E.P. it is time to designate the educational placement—this is the placement stage.

SHOW TRANSPARENCY 8

Decisions at this stage are based on the following questions: What are the eligibilities that can be utilized? Which resources can be assigned to implement this proposed program? Where can the program be implemented in the least restrictive manner? When can the program begin?

In working through these five stages we have considered a number of questions and faced a number of decisions.

As we consider interviewing in this context it is conceivable that there is a role for interviewing at the referral stage in developing the definition of the problem. Perhaps most critically, interviewing plays an extremely important role at the pre-assessment stage. During the assessment stage, interviewing has a traditional role, often in the clinical sense (as in Sullivan's *The Psychiatric Interview*). Interviewing has no formal place in the I.E.P. design or placement stages but if a good job has been done in the three preceding stages, there should be sufficient information on which to base decisions.

Interview based assessment can be defined as the collection of information and the development of assessment questions in an interpersonal context.

SHOW TRANSPARENCY 9

In comparing this definition with others, including the ones that you wrote at the beginning of this workshop, three factors should be considered. Form (or structure), content, and interpersonal relationships all help define differences among definitions of interviewing.

SHOW TRANSPARENCY 10

The first factor, form, has a range from unstructured to structured. Interview based assessment has a minimal structure in that each person should know the purpose of the interview. The questions to be asked are largely specified, but the order and any other aspects of the interview are up to the interviewer. On a line from unstructured to structured we would rate interview based assessment about here.

Point to X on Transparency 10

Because of this relatively unstructured nature the outcome of the interviews remains flexible.

The content of the interview has two primary aspects. We are interested in determining what questions are of concern to interviewees and should be the focus of assessment. Simultaneously, the interview also serves to collect information to answer some of the assessment questions. While it is important to keep these in mind there are other secondary but noteworthy purposes as well.

SHOW TRANSPARENCY 11

These six secondary aspects are: 1. provision of information to others; 2. assistance to others in articulating their ideas and concerns (of special importance to culturally different parents); 3. persuasion of others; 4. teaching of others; 5. providing emotional support to others; and 6. confrontation with others. Do any of you want to add other aspects?

Pause for comments

Remembering that the primary purposes of interviewing are to determine assessment questions and collect information, here is an example: When a teacher is interviewed we ask him/her what are his/her concerns about the student referred. What are the circumstances in which the concerns are evident? What has been tried to alleviate the problem? These and other questions are included in the interview for the teacher. What kinds of questions can you think of for a situation in which the interviewee is to be a parent?

Pause for additional questions. If no one provides comment, be prepared to offer examples.

What if the interviewee is to be a student? What types of questions would you suggest in that case? Or should a student be interviewed?

Pause again for additional questions. If no one volunteers questions, be prepared to offer examples, and to support the fact that the student should often be interviewed.

We will consider a series of suggested questions and some possible forms for use in interviewing as the workshop continues.

The interpersonal relationship created during the interview is based on at least three factors.

SHOW TRANSPARENCY 12

Establishing rapport is obviously important if you are trying to solicit information. Nothing can be more frustrating for an interviewer than to ask question after question and hear little or no response. It is equally frustrating for an interviewee to be bombarded with question after question in a mechanical fashion.

As interviewees share information regarding concerns, emotions come into play. For example, when a teacher shares a concern or problem, the frustration or exasperation associated with the student may also be communicated. Empathy, the ability to communicate caring and understanding, is very important at this critical juncture of the interview. The interviewer must be able to hear not only the facts being expressed but also the feelings.

As the interview progresses, the interviewer facilitates the information gathering process by reinforcing the person being interviewed. Being genuinely encouraging is not always easy. Reinforcement is not only important for the interviewee but also for the interviewer. What kinds of reinforcement would be helpful for an interviewer?

Pause for comments and suggestions for interviewer reinforcement. You may want to write the suggestions on the chalk board. If there are not comments be prepared to note at least 3 yourself. Examples include: doing a thorough job, uncovering unknown data, understanding the child better, broadening the view(s) others have of the student, etc.

Because we are interested primarily in gathering information about concerns and developing questions for assessment, two specific sets of skills are necessary. First, the interviewer must be able to communicate clearly. The questions used must be phrased in such a way that the interviewee understands what is being requested. The suggested questions to be used in interview based assessment may be changed in any way that assists in obtaining information. Clear communication is facilitated by the sensitivity of the interviewer to the communication style of the person being interviewed. One example of clear communication is being able to modify the manner of questioning in the middle of an interview when it is found to be more effective in eliciting information. Can you give me some other examples?

Pause for additional comments and participation

As information is offered, accurate recording is necessary to insure that the data will be useful following the interview. Trying to record verbatim what a person shares is very difficult, if not impossible. Interviewers sometimes complain that they cannot interview and write at the same time. However, it is important to accurately record as much information as possible. If you communicate to the person being interviewed that you are trying to be as accurate as possible, some tension about writing so much may be alleviated.

While suggested forms for the questions to be asked are available, and will be examined during the workshop, some interviewers prefer using blank paper on which to record what the person says. Any form is acceptable as long as the information is captured for future use. Accuracy is the key.

As you examine the literature on interviewing, especially the early psychiatric references, you will find one amazing consistency. All authors agree that the first five minutes sets the tone and expectations for much of the interview. During the first five minutes it is important to clearly state the purpose of the interview and the manner in which the information will be used. The seeds of rapport, empathy, and reinforcement are sown during this initial encounter. Each person has entered the situation with certain expectations. The first five minutes can assist in creating a satisfactory relationship and bringing about a helpful outcome for the total interview.

Not only in the first five minutes but also throughout the interview, listening is the most basic and powerful skill. Depending on what the interviewer hears, the direction of the interview can be adjusted, and a question repeated or a feeling acknowledged. Listening, while elemental to us all, is still very difficult. In refining our own listening skills several guidelines may be helpful.

SHOW TRANSPARENCY 13

Be aware of the reasons you are listening. You might also say beware of the reasons you are listening. If we anticipate what a person is going to say we often unintentionally close our listening to what is actually being communicated.

Related to knowing the reasons for listening is being able to suspend your own judgment. Preconceptions are the greatest barrier to good listening.

Focus on the person being interviewed. Maintain eye-contact at a comfortable level. Don't get into a staring contest, but let the person know you are there to listen to what he or she has to say.

Here is a hard one. It is not always practical, but try it. I think you will find yourself better prepared to respond. Practice waiting 30 seconds before responding. That's tough but can be useful.

Every once in a while tell the person you want to be sure you are listening accurately. Repeat verbatim what you have just heard. Then ask the person to continue. It helps to check your memory and gives the person feedback as to your own accuracy.

As the interview continues you will notice trends or common themes in what is said. A series of problems often have a central expression. For example, if parents report problems in their child's behavior which are exhibited at different times by crying, tantrums, and refusal to comply with any parental demand, what theme is coming through?

Pause for the answer (which is "oppositional behavior")

As you listen to what the person says, reflect to yourself on the content. Can you summarize what has been said? What feelings are being expressed? As you consider these guidelines for listening you might want to sharpen your listening skills. These guidelines, as well as an excellent training manual, are to be found in Carkhuff & Pierce, *The Art of Helping: Trainer's Guide*, (1975).

As you think about listening, remember its special advantage for interviewing. Good listening focuses on the interviewee and avoids the preconceptions of the interviewer.

Apart from our preconceptions as interviewers, we do have certain assumptions which underlie our decision to interview.

SHOW TRANSPARENCY 14

As we listen and record what people say, we know that their concerns can be formulated into answerable questions for the assessment process.

Second, we assume that the information required to answer many of the assessment questions is consciously or unconsciously available from the persons being interviewed. Next, the effectiveness of the interview can be determined by the quality of the assessment questions formulated and the related information. Indeed, the most important validity question regarding interviewing should address this assumption. If we obtain good, answerable questions and some of the information to answer them, have we not done an effective job of interviewing?

Time spent in interviewing will increase the effectiveness of the assessment and the cooperation of everyone. This assumption addresses the question of some people as to why we interview at all. Indeed if a standard battery of tests is going to be used and the placement decision is already made, much of what is required in assessment as well as interviewing seems superfluous. But if individualized assessment and parent/student cooperation is genuinely desired, then interviewing is a necessary component. The interview operationalizes the involvement of the parent (and student where appropriate) as a partner in the assessment process.

Finally, as you interview any one person regarding a student, you will generally find that multiple concerns or questions are the rule rather than the exception.

As we listen to what is said during interviews, we notice that different types of questions serve different purposes. As this workshop has progressed, we have mentioned assessment questions and interview questions. When we tracked the referral to placement process, we considered questions on which decisions are predicated—or decision questions. These three classes of questions and one more which we will add, are formulated in the interview to accomplish two objectives: 1) to express a curiosity or concern, and/or 2) to elicit information.

SHOW TRANSPARENCY 15

Interview questions are those asked by the interviewer during the interview. There are certain questions which are specified for the interview and others that the interviewer adds to clarify or elicit additional information.

Assessment questions are the concerns or reported problems formulated into a question format for the multidisciplinary assessment team to address. Additionally, as assessment progresses, personnel may formulate more questions which pertain to discovered concerns or unexplained behavior during the assessment process. For example, a teacher reports that Bill, a third grade student, is constantly out of his seat bothering others and that he never completes his work. As we interview the teacher, additional problems are discovered. Bill has few friends and other students often tattle on him. Academically, he appears capable, but he seldom completes an assignment. Assessment questions might be, "What can the teacher do to elicit more completed work and reduce Bill's out of seat behavior?" "Is there any skill or ability deficit that is impeding Bill's academic performance, especially his completion of assignments?" As assessment progresses, an assessment professional may question, "Is there any competing habit that may be interfering with Bill's adherence to the sequence of an assignment?" Or, "Why doesn't Bill persist when it appears that he clearly has the ability and prerequisite skills to do the work?" All of these are assessment questions which mirror concerns or reported problems. Decision questions, those we addressed in our presentation of the referral to placement process, help guide our behavior through procedures as they are to be followed.

Eligibility questions are critical to the special education placement stage. Is the student eligible for special education? Sometimes the question may be expressed more cryptically as "Why isn't the student eligible?" The most sensitive decision made by parents and school personnel is with regard to eligibility for special education services. Is the student handicapped according to the definitions provided by regulations? Each definition of a handicap implies questions which have measurable elements on which to base the eligibility decision. For example, mental retardation is defined as significantly sub-average intellectual functioning existing concurrently with deficits in adaptive behavior. That brief definition suggests two eligibility questions. First, is the student significantly sub-average in general intellectual functioning? Second, are there concurrent deficits in adaptive behavior? The answers to the questions aid in the decision of eligibility. Without the questions, the eligibility determination process cannot be public or readily understandable to all possible participants in the eligibility decision.

Generally, questions (any of the 4 classes) can be divided into seven types.

SHOW TRANSPARENCY 16

Each type of question predicts a particular type of accurate response. For example, "Who?" questions provoke names, titles, and identifying descriptions. "What is it?" questions require nouns or definitions. "What is happening?" will elicit verbs and behaviors. "Why?" questions predict "because" responses and judgments. "How?" questions yield adverbs, adjectives, methods, and/or styles. A "When?" question predicts a time, date, duration, or frequency response. "Where?" questions suggest location or situation. Our purpose for noting types of questions is to sensitize you to how you can bias your answer by formulating a question in a particular manner. For example, "Why?" questions are frought with problems. A "because" or "judgment response" is susceptible to a variety of undesirable influences. Prejudice and theoretical predisposition are but two. Yet, "Why?" questions may be unavoidable. For example, "Why can't Jenny see the board from the back row, when she has no problem playing left field in baseball at recess?" However, a question such as "Why doesn't George like his mother?" may not be formulated in the most effective or answerable manner.

As the multidisciplinary team begins to answer the assessment questions there are a number of sources to which members can turn for information.

SHOW TRANSPARENCY 17

As you can see, if the need is for behavioral information, the following sources can serve those information needs: the child, parents, siblings, teacher(s), other school staff, peers. For information about a student's program the sources include the child, teachers, aides, principal, other school staff, peers, and parents. The student's home may require information from the child, parents, siblings (if there are any), and relatives or neighbors.

In developing assessment questions we should involve the child, parents, siblings, teachers, other school staff, the school principal and any specialists as they are needed. Regarding the use of specialists, their services are best justified when an assessment question has arisen which can best be answered through their particular expertise.

As we conduct interviews, we should be concerned with the reliability and validity of the process.

SHOW TRANSPARENCY 18

By reliability we mean the degree of stability or consistency of the information across interviewers. Validity, for our purposes, suggests two questions: 1. Is the information obtained through interviews sufficient to construct assessment questions and provide some answers? This is our attempt at demonstrating content validity. 2. Does the information derived from the interview relate to other information obtained in other aspects of the assessment? Asked in this way, we are examining the criterion-related validity of the interview process.

It is often difficult in the everyday practice of interviewing to determine reliability and validity. But you can do a rough check of your procedures by answering these four questions:

SHOW TRANSPARENCY 19

Can you document the information? Does the information have fact validity? Is the information observable? Is the information replicable? You might generally ask, "If someone else were to interview would they obtain similar information and is the information factual?" In this manner you are maintaining an objective examination of what you do in interviewing.

To recapitulate, collecting data via interviews can be used at three junctures in the referral to placement process.

SHOW TRANSPARENCY 20

Interviews at the referral stage clarify the referral and elicit the participation of everyone who should be involved in the process. Interview data at the pre-assessment stage assists in developing assessment questions. The traditional use of the interview in clinical practice is exemplified at the assessment stage when interviews are used to answer appropriate assessment questions.

Our focus in this inservice is on the first two stages of the process. Additionally we will consider how eligibility questions may be formulated.

Pause for questions, and discuss the questions

Administer Instant Replay #1. You might want to give participants time to scan the information for a few minutes. There are four questions. Ask participants to turn to page W-7 of their worksheets. Give them 10-15 minutes to complete the page.

At the close of the time period show the transparency T-22 (answers to the first two questions)

SHOW TRANSPARENCY 21

Ask participants to compare their answers with those on the transparency. Ask if they would like answers explained further.

SHOW TRANSPARENCY 22

As before ask participants to compare their answers with those on the transparency, and request further explanations if necessary.

PRESENTATION: REFERRAL INTERVIEWING AND ACTIVITY #1

As students encounter difficulties in school and they are noted by school personnel, referrals are a logical outcome. When a teacher has tried to solve a student's difficulty or problem and has been unsuccessful, the option to refer creates an opportunity for additional assistance. The referral becomes a request for help and is usually completed by describing the problem and noting relevant information. Let's use an example referral to illustrate how interviewing can be helpful.

David is a second grade boy. The referral problem, on the form filled out by his teacher, says "David cannot read." Fortunately, the teacher also indicates "He is not having trouble with math, but his reading is on a low first grade level." In response to a referral form item, the teacher reports that individual work with David has been unsuccessful and that the Title I teacher has said that he is not eligible for that class.

On page W-8 of your worksheets, you will see the brief referral form that the teacher has completed for David. The parents have told the teacher that they will be happy to help in any way, but that they don't know why David is having problems.

While this referral is brief we do have a beginning for our examination of David at the referral stage. The factors which impact the quality and utility of referrals are:

SHOW TRANSPARENCY 23

- The amount and descriptiveness of information from the referral source,
- The availability of useful information about the context of the referral,
- The extent of useful information about pre-referral attempts to resolve referral problems,
- The extent to which the referral to placement process is viewed as appropriate and useful by parents, teachers, administrators, students, etc.

As we examine the referral for David we can judge that more information is needed to complete the referral and make decisions regarding it. Now we must consider the use of the interview, what general questions we should ask, and to whom the questions should be addressed.

Here are the general questions to be asked during the interview of the teacher at the referral stage.

SHOW TRANSPARENCY 24

Read the questions as they are listed on T-24. Note that the questions are also listed on p. W-9 of their worksheets.

From the answer given to question 7, you are able now to select from one to three concerns for follow-up. The number of concerns selected is usually determined by the amount of time available for the interview. The follow-up questions are as follows:

SHOW TRANSPARENCY 25

Read the questions as they are listed on T-25. Note that the questions are also listed on p. W-10 of the worksheets.

As you have seen and heard the questions for the referral stage interview for David's teacher, do you have any questions about these questions?

Pause for questions and comments

As a general rule the procedure noted on pages W-11 and W-12 of your worksheets has been helpful as a sequence for the referral interview of the teacher. Take a few moments to read the guide and then we will discuss it.

Pause for enough time for the participants to read the material.

After reading the guide do you have any questions about the sequence of the interview? About any other aspect of the teacher interview?

Pause for questions and comments

Pages 13 through 18 of your worksheets represent a suggested form that might be used to facilitate this process. As we mentioned earlier, many people prefer to use blank paper while others use a form. You can try both or make a form of your own. Obtaining the information is the most important product of the interview regardless of the form in which it is recorded. Are there any questions about the form?

Pause for questions and discussion of various methods of recording the data. But keep the discussion BRIEF, because time will be needed for the activity which follows.

Now let's consider the mechanics of the teacher interview using David as our example. To do this you will need to divide into teams of three people each. Do that now.

Follow the instructions for Activity 1, Set 1 on the following pages.

ACTIVITY 1

INTERVIEWING TRIADS

Purpose: To provide experience and exposure to the referral interview and its various roles. The activity incorporates both the roles of interviewer and interviewee, as well as one or more observers of the process.

Time: 30 minutes: Instructions .... 5 minutes
Activity .... 20 minutes
Analysis .... 15 minutes

Group Size: The size of the group is limited only by the trainer's ability to manage and perhaps by the amount of room in the facility.

Group Structure: Participants form small groups of three (four people may join when odd numbers occur).

Physical Setting: A room large enough to comfortably accommodate the triads in a manner avoiding [illegible] problems.

Materials: Participants need only their worksheets and pens or pencils.

Overview: This activity is designed to provide experience in the teacher and parent interview. One person plays the role of interviewer, another the teacher or parent, and the other participant acts as an observer.

Set 1

1. The trainer divides the group into smaller groups of 3. Four could form a group where odd numbers exist.
2. The trainer asks each group to volunteer to be either an interviewer, a teacher (in the first round, a parent in the second round), and an observer. Ask the participants to raise their hands in response to. . .
   "Who is the interviewer?"
   "Who is the teacher?"
   "Who is the observer?"
3. Instructions to the Interviewer:
   "You are now to ask the questions as they have been described by the trainer. You can use the form or blank paper. Study the referral of David, and the questions to be asked as I give instructions to the others."
4. Instructions to the Teacher:
   "You are going to act as the teacher who completed the referral regarding David. Study the referral you completed. Additionally, you have a role description in your worksheets on page 19. Study it and try to conform as closely to the role description as possible. When a question is asked for which the description has not provided an answer, use your creativity. However, avoid the temptation to be too wordy or extravagant in your answer. Be as realistic as you can.'
5. Instructions to Observer(s):
   "You are to observe the process and take notes on the interaction. An observation form is provided on page 20 of your worksheets. Do not interrupt the interview or comment until the process has been ended by the trainer. At that point you will have the opportunity to provide feedback. Remember, your primary role is to observe, and you will be asked to comment on the positive, constructive aspects of the interviewer's skills.
6. Now note to the participants that the interviewer has approximately 15 minutes in which to conduct the interview. Ask if there are any questions about what is expected. Give participants a few minutes to study their roles and then encourage them to begin.
7. Circulate about the room, and encourage participation of the groups.
8. Following approximately 15 minutes, ask the groups to take about 2 minutes to complete the interview.
9. At the close of the time period, ask the observers to provide feedback, constructive and positive, to the interviewer. Allow approximately 3 minutes for this process.
10. Next ask the group for general feedback regarding the experience. What were their *feelings?* What *thoughts* (what they said to themselves) occurred? What *behaviors* did they note in themselves or others during the process? Use a chart (newsprint) or a chalkboard divided in the manner shown below.

	Interviewer	Teacher/Parent	Observer
Feelings			
Thoughts			
Behaviors			

Analysis: Take careful note of the feelings and thoughts reported. Actively listen to any embarrassment or hostility that may occur. A certain level of defensiveness is expected. Some awkwardness in interviewing may be attributed to the relative unfamiliarity with the questions. However, the feelings of the teacher and interviewer are often good indications of how people may feel in the actual process. Caution potential interviewers to take the feelings into consideration when preparing for and conducting interviews.

Don't be defensive about this process. Interviewing is difficult and the questions are only general ones. If the participants want to add or delete questions, be permissive. Encourage them to have fun during the simulation. Have fun yourself, but help the group to avoid being silly.

Set 2

Process:

1. Ask the observer to take the role of interviewer now for the next experience. The previous interviewer will become the parent, and the person who played the teacher will become the observer. If there are four in the group, assign the two observers to the roles of interviewer and parent. The other two will become observers.
2. The role of either mother or father (if you have four to a group, you could assign both roles) is described on page 19 of the worksheets. Give the participants time to study their roles (about 2-3 minutes). Ask for questions about what is expected.
3. Tell the groups that they will have approximately 15 minutes to conduct the interview. Remind observers that they are to record and not interrupt the process.
4. Repeat the sequence described in the first set, including the analysis. *Note: you will have to prepare another chart or erase the chalk board.*

Optional Set 3

Process: Assign the role of David to a member of each group. Conduct the sequence as described above.

Cautions and Pitfalls: Beware of observers who become negative and excessively critical. This can obscure the purpose of the activity and discourage the potential interviewer.

Also, groups will tend to drag on and should be encouraged to stop and participate in the analysis. Emphasize that individual differences often account for variance in times of the interview. Remember, have fun!

Now that we know more about David's problems from the teacher's perspective, it is appropriate to determine what the parent might have to share about the problems. Here are the general questions which are usually asked during the referral parent interview.

SHOW TRANSPARENCY 26

Read the questions quickly. Note that the questions are similar to those used for the teacher.

SHOW TRANSPARENCY 27

As with the teacher, the follow-up questions are similar. These are listed on page 22 of your worksheets.

Do you have any questions or comments about these questions?

Pause for questions and then say. . . .

Now let's repeat the activity, this time interviewing David's parent.

Follow the instructions for Activity 1, Set 2

At the completion of Activity 1, Set 2, you have the option of using Set 3, if time permits. If you choose to do set 3, then the groups remain where they are. If not, then the groups can return to their original seats.

Now say. . . .

As the information builds regarding David's referral it might be appropriate to interview David himself. What factors should be considered in determining whether or not to interview a student?

Pause and encourage participation. Write the factors on the chalk board or newsprint.

On page 32 you will find the general referral questions that might be appropriate for the student. They are, predictably now, much the same as those for the parent and teacher. So are the follow-up questions on page 33. And following that page is the suggested form which could be used for the student. As you examine it, do you have any questions or comments?

Pause for questions or comments. It is at this time that you would normally do Set 3 of the activity, if you had previously elected to go ahead with it. And if that is the case then you simply follow the directions for Activity 1, Set 3. After completion, you have the groups return to their original seats and proceed.

You can now consider yourself an interviewer, and you should complete the self assessment on page 40.

Allow 5 minutes for completion of the self-assessment, and ask for comments and questions.

PRESENTATION:
Generating Assessment Questions and Conducting the Pre-Assessment Conference

Following the completion of the referral interviews it is time to examine what the products of referral interviews should be:

SHOW TRANSPARENCY 28

Read Transparency 28 and allow time for participants to copy if they wish.

We can best judge the effectiveness of the referral interview process by examining the following factors:

SHOW TRANSPARENCY 29

Read Transparency 29 and ask for comments.

As we consider David's referral, we can now use the data to make decisions at the referral stage. Using David as an example let's consider these questions again:

SHOW TRANSPARENCY 4 Again

Notice that this is a transparency used before. Repeat each question on the transparency and elicit answers from the audience. Note that the typical consensus is that David should be assessed. At the close of the questions, say. . . .

When this activity is conducted with most groups, the consensus is that David should be assessed. As we prepare to conduct the assessment, a pre-assessment conference is held to plan the assessment. What factors can influence the effectiveness of the pre-assessment conference?

SHOW TRANSPARENCY 30

As you can see, the person who acts as chairperson is the key component in the pre-assessment process. During the meeting or conference there are a number of decisions to consider and a suggested format to follow is given on pages 42 and 43 of the workbook. Study those pages and notice what the agenda is.

Pause for a few minutes and then. . .

SHOW TRANSPARENCY 5 Again

Notice that T-5 is a transparency you have used before. Read the questions and consider the answers as the participants offer them.

The answers to these questions make up the context of the pre-assessment conference.

Let's go back to the first question at the pre-assessment stage. If we were a multidisciplinary assessment team, meeting to consider David with the information we have now, what assessment questions would we generate?

Encourage participants to look at the referral interview data they have collected and begin to share questions. As questions are verbalized, you should write them on a sheet of newsprint or poster paper. Facilitate brainstorming by accepting any question shared.

After a variety of questions have been offered, ask the group to see if any questions can be combined without making the question too wordy or too complicated to answer parsimoniously.

Next, ask the group to priority rank the remaining questions. Obtain a vote from the group on each question's ranking.

You should now have a list of assessment questions for David. Ask the group to evaluate the questions using criteria of Transparency 31.

SHOW TRANSPARENCY 31

After discussion, say . . . .

The next task during the pre-assessment conference would be to assign these questions to members of the multidisciplinary team.

SHOW TRANSPARENCY 5, Again

When all questions that we noted on this transparency have been addressed, the pre-assessment conference will have been completed.

Once completed, the chairperson may choose to evaluate his/her performance. A rating form has been prepared and you will find it on page 44. This may help in such a self-evaluation. Look at that rating form and see if you think it covers the essential skills.

Pause for comments and questions. Discuss the form for approximately 3 minutes or less.

When interviewing is used during the assessment stage several factors must be considered.

SHOW TRANSPARENCY 32

While it is not the purpose of this workshop to train interviewers for this stage of the process, it is important to know when it is effective to use interviewing during assessment.

Consider these three factors:

SHOW TRANSPARENCY 33

Read Transparency 33 and allow time for copying. Ask for questions.

PRESENTATION:
Developing Eligibility Questions

Early in the workshop we mentioned that eligibility questions help make the decisions public and really understandable. To determine the eligibility questions for any handicap it is first necessary to delineate the measurable elements of any definition. Consider the definition of mental retardation, for example, specifically as it is listed in the regulations for P.L. 94-142.

SHOW TRANSPARENCY 34

As you can see, there are three measurable elements in the definition: (1) Sub-average intelligence, (2) deficit in adaptive behavior, and (3) adversely affected educational performance. Based on these measurable elements we can develop eligibility questions.

SHOW TRANSPARENCY 35

Note each question and allow time for comment and discussion. Make sure the participants understand the concept of "measurable element".

Now, you will find the definition of "seriously emotionally disturbed", also taken from the regulations for P.L. 94-142, on page 47 of your worksheets. Your assignment now is to see how many measurable elements you can find within that definition.

Pause for about 5 minutes and then ask:

Okay, how many measurable elements did you find in that definition?

Elicit estimates or their actual numbers

As you look at the definition you can see at least four dimensions within the definition and at least 14 measurable elements.

SHOW TRANSPARENCY 36

Can you see how these elements were derived? Are they measurable?

Pause for comments and questions. If time permits do Activity 2 at this time. Notice that there are a variety of methods in which to divide the group.

If Activity 2 is *NOT* used, the trainer should provide example questions for one of the elements that have been derived during the previous participant exercise. For example, the element "inability to learn not explained by intellectual factors" could result in the following eligibility questions: "On what is the inability to learn based?" "Does the measured level of intellectual functioning explain the inability to learn?" "Are there racial or cultural factors that might influence the measurement of intelligence in addressing this element?"

ACTIVITY 2

DEVELOPING ELIGIBILITY QUESTIONS

Purpose: To provide the participants with experience in developing eligibility questions which match measurable elements of a definition of a handicap.

Time: 20-45 minutes: Instructions .... 5 minutes
Process .... 15-25 minutes
Analysis .... 5-20 minutes

As determined by trainer management. In general, the larger the group, the longer it takes.

Group Size: The size of the group is determined by the trainer's ability to manage the process. This activity has been done with groups as large as 200.

Group Structure: Participants need tables on which to prepare a chart. The size of each group will be determined by how many individuals can work comfortably around each table, or by how many tables you have to work with.

Physical Setting: A room large enough to accommodate tables and chairs sufficient for the group's size.

Materials: Newsprint or poster paper, approximately 24 inches by 36 inches, waterbased markers, and masking tape.

Activity: This experience will result in each of the small groups preparing a list of eligibility questions which a committee might ask itself to determine if a child's characteristics fit the measurable element of the definition.

Process:

1. Tell the group that they need to divide into small groups of, say 6 if you have a large number of participants (50 or more), or less if the total group is less than 50. Encourage small group formations.
2. Explain that this activity is designed to provide practice in developing eligibility questions. Eligibility questions are defined as questions which the committee asks itself to determine if the student's characteristics fit the measurable elements of the definition.
3. Provide an example by using the following chart drawn on a large piece of poster paper or newprint.

   "inappropriate feelings under normal circumstances"

   —What feelings have been reported by the student?

   —Is the student experiencing normal circumstances (what is normal)?

   —What is the basis of a judgment of appropriateness?

   —Is there a significant discrepancy between the student's reported feelings and the standard of appropriateness?
4. Tell the small groups that you will circulate among them and assign each small group a measurable element from the definition of "seriously emotionally disturbed". They are to write their particular measurable element at the top of the chart or newsprint. Next they are to brainstorm a series of questions that a committee would ask to determine presence or absence of eligibility for a given student. After they have generated all of the possible questions, or when the time is up, they should list them, *legibly*, on the chart with the marker you will provide. Ask for questions, and tell them to begin. Allow about 15-20 minutes for this activity.
5. As you circulate among the groups, give each a piece of newsprint or poster paper, a marker, and assign a measurable element from Transparency 36.
6. Circulate among the small groups after the assignments have been made, and answer any questions that may have arisen. Your movement among the small groups at this time will facilitate interaction.
7. As the groups complete their tasks, collect their newsprint or charts and tape them to the walls about the room.

Analysis: As time permits, ask each group to read their results to the group at large and comment on the process of their particular group in deriving the eligibility questions they came up with.

Note for the participants that all definitions of handicaps are amenable to this process.

Cautions and Pitfalls: It is important to encourage interaction at the stage when the small groups begin to work. Because most participants have not developed eligibility questions in this manner before, they may be reluctant to proceed. You must gently urge them on, answering any questions they may have.

Upon completion of Activity 2, proceed with the following script. . . .

Using the same method we have applied to the definitions of mental retardation and seriously emotionally disturbed, we can examine any of the handicaps for their measurable elements. To determine eligibility for any child, we must be able to compare the measurable elements within a definition of handicap such as mental retardation or seriously emotionally disturbed with the data we have compiled. By sharing with all members of the committee what is measurable we make the eligibility decision more public, objective, and susceptible to committee deliberation as opposed to its being a preconceived conclusion without the benefit of committee deliberation.

Are there any questions about this process?

Pause for comments and questions and discuss

As we consider what we have covered in this workshop on interview based assessment, especially since the first instant replay, there are several points I would like to re-emphasize. Take a few moments and complete instant replay number 2 which is found on page 49 of your worksheets.

Allow about 5 to 10 minutes for completion of the instant replay.

Following completion of the instant replay by the group, expose them to the answers by using Transparency 37.

SHOW TRANSPARENCY 37

Allow participants time to check their answers. Ask if there are any questions.

When we began this workshop we stipulated that interview based assessment had a basic premise.

SHOW TRANSPARENCY 1, Again

Interviewing as we have presented it here is designed to give assessment a satisfactory beginning, to develop assessment questions as a rationale for individualizing our assessment, and to examine all of the situations in which the student may be having problems.

Thank you.

END OF WORKSHOP

TRANSPARENCIES FOR IBA

INTERVIEWING
FOR ASSESSMENT DECISION MAKING

IF ASSESSMENT IS TO HAVE A SATISFACTORY OUTCOME, IT MUST HAVE A SATISFACTORY BEGINNING -- BY DETERMINING THE QUESTIONS TO BE ANSWERED IN ASSESSMENT AND DISCOVERING THE SITUATIONS WHICH MAKE THE QUESTIONS NECESSARY.

A TRUE STORY

FACTS:

6 YEAR OLD BOY FIRST GRADE

TEACHER UNABLE TO ELICIT SPEECH (TRIED SEVERAL WEEKS)

REFERRED TO SCHOOL PSYCHOLOGIST AND SPEECH THERAPIST

PSYCHIATRIST CONSULTED

COULD HE BE AUTISTIC?

SOCIAL WORKER CONTACTS MOTHER--SHE REFUSES

MOTHER VISITS SCHOOL

AN EXTREME EXAMPLE

THE REFERRAL TO PLACEMENT PROCESS

REFERRAL STAGE

PRE-ASSESSMENT STAGE

ASSESSMENT STAGE

I.E.P. DESIGN STAGE

PLACEMENT STAGE

REFERRAL STAGE

IS THERE A PROBLEM?

WHAT ASSISTANCE IS NEEDED?

- TO DEFINE IT?
- TO RESOLVE IT?

SHOULD THE CURRENT PROGRAM CONTINUE INTACT?

SHOULD OTHER NON-SPECIAL EDUCATION RESOURCES BE UTILIZED?

SHOULD ASSESSMENT FOR POTENTIAL SPECIAL EDUCATION ASSISTANCE BE REQUESTED?

PRE-ASSESSMENT STAGE

WHAT ARE THE ASSESSMENT QUESTIONS?

WHAT ARE THE PRIORITIES AMONG THESE QUESTIONS?

HOW CAN THESE QUESTIONS BE ANSWERED?

WHICH ASSESSMENT PROCEDURES ARE MOST APPROPRIATE UNDER THE SPECIFIC CIRCUMSTANCES?

WHO CAN CARRY OUT THESE PROCEDURES?

HOW WILL THE ASSESSMENT RESULTS AND RECOMMENDATIONS BE COMMUNICATED?

ASSESSMENT STAGE

WHAT ARE THE ANSWERS TO THE ASSESSMENT QUESTIONS?

WHAT ELIGIBILITY QUESTIONS SHOULD BE ADDRESSED?

WHAT OTHER ASSESSMENT PROCEDURES SHOULD BE USED TO ANSWER QUESTIONS?

WHAT OTHER INFORMATION IS AVAILABLE WHICH MAY ASSIST IN DETERMINING THE CHILD'S EDUCATIONAL AND RELATED SERVICE NEEDS?

I.E.P. DESIGN STAGE

WHAT ARE APPROPRIATE PRIORITY GOALS AND OBJECTIVES FOR THE STUDENT BASED ON THE ANSWERS TO THE ASSESSMENT QUESTIONS?

WHAT ARE APPROPRIATE METHODS, MATERIALS, ENVIRONMENTS, AND STAFFING RATIOS FOR MEETING THESE GOALS AND OBJECTIVES?

WHAT ARE THE ELIGIBILITY FACTORS WHICH CAN BE UTILIZED TO PROVIDE AN APPROPRIATE PROGRAM?

IF ALL OR PART OF THE RECOMMENDED PROGRAM IS OUTSIDE REGULAR EDUCATION, WHAT MUST OCCUR FOR THE CHILD TO RETURN TO A REGULAR CLASS SETTING?

WHAT ARE THE CRITERIA FOR DETERMINING THE SUCCESS OF THE PROPOSED PROGRAM?

WHAT ARE THE STAFF DEVELOPMENT IMPLICATIONS OF THIS I.E.P.?

PLACEMENT STAGE

WHAT ARE THE ELIGIBILITIES THAT CAN BE UTILIZED?

WHICH RESOURCES CAN BE ASSIGNED TO IMPLEMENT THIS PROPOSED PROGRAM?

WHERE CAN THE PROGRAM BE IMPLEMENTED IN THE "LEAST RESTRICTIVE MANNER"?

WHEN CAN THE PROGRAM BEGIN?

INTERVIEWING

(DEFINITION) THE COLLECTION OF INFORMATION AND DEVELOPMENT OF ASSESSMENT QUESTIONS IN AN INTERPERSONAL CONTEXT

FORM

CONTENT

INTERPERSONAL RELATIONSHIP

FORM

INTERVIEWING*

I-------------------X--I
Unstructured Structured

CONTENT

PRIMARY ASPECTS

1. TO DETERMINE THE ASSESSMENT QUESTIONS THAT ARE OF CONCERN TO INTERVIEWEES

2. TO COLLECT INFORMATION TO ANSWER SOME OF THE QUESTIONS

* INTERVIEW BASED ASSESSMENT

SECONDARY BUT IMPORTANT ASPECTS OF INTERVIEWS FOR ASSESSMENT DECISION MAKING

1. PROVISION OF INFORMATION TO OTHERS
2. ASSISTANCE TO OTHERS IN ARTICULATING THEIR IDEAS AND CONCERNS
3. PERSUASION OF OTHERS
4. TEACHING OF OTHERS
5. PROVIDING EMOTIONAL SUPPORT TO OTHERS
6. CONFRONTATION WITH OTHERS

INTERPERSONAL RELATIONSHIP

FACTORS:

RAPPORT EMPATHY REINFORCEMENT

SKILLS:

CLEAR COMMUNICATION ACCURATE RECORDING

THE FIRST FIVE MINUTES:

LISTENING SKILLS*

BE AWARE OF THE REASONS YOU ARE LISTENING

SUSPEND YOUR OWN JUDGMENT

FOCUS ON THE PERSON BEING INTERVIEWED

PRACTICE WAITING 30 SECONDS BEFORE RESPONDING

PRACTICE REPEATING VERBATIM AS A MEMORY CHECK

LOOK FOR COMMON THEMES IN WHAT IS SAID

REFLECT TO YOURSELF ON THE CONTENT OF WHAT THE PERSON SAYS

*CARKHUFF & PIERCE (1975)

ASSUMPTIONS

THE CONCERNS PEOPLE EXPRESS REGARDING A STUDENT CAN BE FORMULATED INTO ANSWERABLE QUESTIONS

THE INFORMATION REQUIRED TO ANSWER MANY OF THE QUESTIONS IS CONSCIOUSLY OR UNCONSCIOUSLY AVAILABLE FROM THE PERSONS BEING INTERVIEWED

THE EFFECTIVENESS OF THE INTERVIEW CAN BE DETERMINED BY THE QUALITY OF THE ASSESSMENT QUESTIONS FORMULATED AND THE RELATED INFORMATION

TIME SPENT INTERVIEWING WILL INCREASE THE EFFECTIVENESS OF THE ASSESSMENT AND THE COOPERATION OF EVERYONE

MULTIPLE CONCERNS OR QUESTIONS ARE THE RULE RATHER THAN THE EXCEPTION

QUESTIONS

- EXPRESSES A CONCERN OR CURIOSITY
- ELICITS INFORMATION

4 CLASSES OF QUESTIONS

INTERVIEW QUESTIONS

ASSESSMENT QUESTIONS

DECISION QUESTIONS

ELIGIBILITY QUESTIONS

TYPES OF QUESTIONS

TYPES	RESPONSES
WHO	NAME, TITLES, IDENTIFYING DESCRIPTIONS
WHAT IS IT	NOUNS, DEFINITIONS
WHAT IS HAPPENING	VERBS, BEHAVIORS
WHY	BECAUSE, JUDGMENTS
HOW	ADVERBS, ADJECTIVES, METHODS, STYLES
WHEN	TIMES, DATES, DURATION, FREQUENCIES
WHERE	LOCATIONS, SITUATIONS

SOURCES OF INFORMATION

INFORMATION NEEDS	SOURCES
STUDENT'S BEHAVIOR	CHILD, PARENTS, SIBLINGS, TEACHER, OTHER SCHOOL STAFF, PEERS
STUDENT'S SCHOOL PROGRAM	CHILD, TEACHER, AIDE, PRINCIPAL, OTHER SCHOOL STAFF, PEERS, PARENTS
STUDENT'S HOME ENVIRONMENT	CHILD, PARENTS, SIBLINGS, RELATIVES
ASSESSMENT QUESTIONS	CHILD, PARENTS, SIBLINGS, TEACHERS, OTHER SCHOOL STAFF, PRINCIPAL, SPECIALISTS

RELIABILITY

DEGREE OF STABILITY OR CONSISTENCY ACROSS INTERVIEWERS

VALIDITY

IS THE INFORMATION OBTAINED THROUGH THE INTERVIEW(S) SUFFICIENT TO CONSTRUCT ASSESSMENT QUESTIONS AND PROVIDE SOME ANSWERS (CONTENT VALIDITY)?

DOES THE INFORMATION DERIVED FROM THE INTERVIEW RELATE TO OTHER INFORMATION OBTAINED IN OTHER ASPECTS OF THE ASSESSMENT (CRITERION-RELATED VALIDITY)?

A ROUGH CHECK FOR RELIABILITY/VALIDITY

CAN YOU DOCUMENT THE INFORMATION?

DOES THE INFORMATION HAVE FACE VALIDITY?

IS THE INFORMATION OBSERVABLE?

IS THE INFORMATION REPLICABLE?

COLLECTING INTERVIEW DATA

REFERRAL STAGE* -- INTERVIEW TO CLARIFY REFERRAL
ELICIT PARTICIPATION

PRE-ASSESSMENT STAGE* -- USE INTERVIEW DATA TO DEVELOP
ASSESSMENT QUESTIONS

ASSESSMENT STAGE -- INTERVIEW TO ANSWER ASSESSMENT QUESTIONS
WHEN APPROPRIATE

* THE FOCUS OF THIS SECTION IS ON THE FIRST TWO STAGES.

WHAT ARE THE 5 STAGES IN THE PROCESS THAT SERVES AS A CONTEXT FOR INTERVIEWING?

1. REFERRAL
2. PRE-ASSESSMENT
3. ASSESSMENT
4. I.E.P. DESIGN
5. PLACEMENT

NAME THE TWO PRIMARY ASPECTS OF INTERVIEWING:

1. TO DETERMINE THE ASSESSMENT QUESTIONS THAT ARE OF CONCERN TO INTERVIEWERS

2. TO COLLECT INFORMATION TO ANSWER SOME OF THE QUESTIONS

LIST THREE OF FIVE ASSUMPTIONS DISCUSSED:

1. THE CONCERNS PEOPLE EXPRESS REGARDING A STUDENT CAN BE FORMULATED INTO ANSWERABLE QUESTIONS

2. TIME SPENT INTERVIEWING WILL INCREASE THE EFFECTIVENESS OF THE ASSESSMENT AND THE COOPERATION OF EVERYONE

3. THE EFFECTIVENESS OF THE INTERVIEW CAN BE DETERMINED BY THE QUALITY OF THE ASSESSMENT QUESTIONS FORMULATED AND THE RELATED INFORMATION

THERE ARE FOUR ROUGH CHECKS FOR RELIABILITY/VALIDITY.

NAME THEM:

1. CAN YOU DOCUMENT THE INFORMATION?
2. DOES THE INFORMATION HAVE FACE VALIDITY?
3. IS THE INFORMATION OBSERVABLE?
4. IS THE INFORMATION REPLICABLE?

REFERRAL STAGF

FACTORS IMPACTING THE QUALITY AND UTILITY OF REFERRALS:

- AMOUNT AND DESCRIPTIVENESS OF INFORMATION FROM REFERRAL SOURCE
- AVAILABLITY OF USEFUL INFORMATION ABOUT THE CONTEXT OF THE REFERRAL
- EXTENT OF USEFUL INFORMATION ABOUT PREREFERRAL ATTEMPTS TO RESOLVE REFERRAL PROBLEMS
- EXTENT TO WHICH THE REFERRAL TO PLACEMENT PROCESS IS VIEWED AS APPROPRIATE AND USEFUL BY PARENTS, TEACHERS, ADMINISTRATORS, STUDENTS, ETC.

GENERAL REFERRAL QUESTIONS FOR THE TEACHER

1. IN YOUR JUDGMENT, IS THERE ANYTHING IN THE CHILD'S BEHAVIOR OR APPEARANCE TO RAISE CONCERNS (VISION, HEARING, DEVELOPMENT AND MATURITY COMPARED TO PEERS, PROBLEMS OF ADJUSTMENT COMPARED TO PEERS, OTHER PROBLEMS)?

2. WHAT DOES THE CHILD LIKE? HOW DO YOU KNOW THIS?

3. WHAT DOESN'T THE CHILD LIKE? HOW DO YOU KNOW THIS?

4. WHAT DOES THIS CHILD DO WELL: HOW DO YOU KNOW THIS?

5. WHAT DOES THE CHILD DO THAT YOU BELIEVE S/HE SHOULD NOT DO?

6. WHAT DOESN'T THE CHILD DO WHICH YOU BELIEVE S/HE SHOULD DO?

7. FROM AMONG THE CONCERNS REGARDING THIS CHILD THAT YOU HAVE NOTED FOR ME, WHICH DO YOU CONSIDER MOST IMPORTANT?

FOLLOW-UP QUESTIONS FOR TEACHER-NOTED CONCERNS

8. HOW LONG HAVE YOU BEEN AWARE OF THIS CONCERN?

9. HOW OFTEN HAVE YOU BEEN AWARE OF THIS CONCERN?

10. UNDER WHAT CONDITIONS HAS THIS BEEN NOTICED BY YOU (TIME OF WEEK OR DAY, WHERE, DURING WHAT ACTIVITIES, ETC.)?

11. WHAT HAVE YOU DONE ABOUT THIS ALREADY?

12. WHAT CHANGES OCCURRED AS A RESULT OF WHAT YOU DID?

13. WHO HAVE YOU CONSULTED ABOUT THIS (PARENTS, COUNSELOR, PHYSICIAN, CLERGYMAN, PSYCHOLOGIST, ETC.)?

14. WHAT CHANGES HAVE BEEN MADE AS A RESULT OF THIS CONSULTATION? AT HOME AND ELSEWHERE?

15. HOW DO OTHER CHILDREN IN THE CLASSROOM (OR ELSEWHERE) RESPOND TO _________________'S (THE CHILD'S) BEHAVIOR?

16. HOW DOES THE CHILD REACT TO THEIR RESPONSES?

17. WHAT WOULD YOU LIKE TO SEE TRIED IN THE CLASS AND IN THE SCHOOL WHICH HAS NOT BEEN TRIED YET?

18. WHAT SPECIFIC HELP COULD YOU USE IN THE CLASSROOM TO HELP THIS CHILD SUCCEED?

19. WHAT SPECIFIC TYPES OF SERVICE OR PROGRAM DOES THIS CHILD NEED IN ORDER TO RESOLVE THE ISSUE IDENTIFIED IN THIS CHILD'S CASE?

20. WHAT QUESTIONS WOULD YOU LIKE ANSWERED DURING THE ASSESSMENT PROCESS THAT WOULD HELP ASSURE THE CHILD'S SUCCESS AT HOME, SCHOOL, OR PLAY?

GENERAL REFERRAL QUESTIONS FOR THE PARENT(S)

1. IN YOUR JUDGMENT, IS THERE ANYTHING IN YOUR CHILD'S BEHAVIOR OR APPEARANCE TO RAISE CONCERNS (VISION, HEARING, DEVELOPMENT AND MATURITY COMPARED TO PEERS, ADJUSTMENT COMPARED TO OTHERS, OTHER PROBLEMS)?

2. WHAT ARE YOUR CHILD'S LIKES? GIVE EXAMPLES.

3. WHAT ARE YOUR CHILD'S DISLIKES? GIVE EXAMPLES.

4. WHAT ARE YOUR CHILD'S SUCCESSES? GIVE EXAMPLES.

5. WHAT HOPES OR IDEAS DO YOU HAVE FOR YOUR CHILD?

6. WHAT ARE THE BEHAVIORS THAT YOUR CHILD DOES WHICH YOU WISH THAT S/HE WOULD NOT DO?

7. WHAT ARE THE BEHAVIORS THAT YOUR CHILD DOES NOT DO WHICH YOU WISH S/HE WOULD DO?

8. FROM AMONG THE CONCERNS YOU HAVE GIVEN REGARDING YOUR CHILD, WHICH ONE (OR MORE) DO YOU CONSIDER THE MOST IMPORTANT?

FOLLOW-UP QUESTIONS FOR THE PARENT(S)

9. HOW LONG HAVE YOU BEEN AWARE OF THIS?

10. HOW OFTEN HAVE YOU NOTICED THIS?

11. UNDER WHAT CONDITIONS HAVE YOU NOTICED IT (TIME OF WEEK OR OR DAY, WHERE, DURING WHAT ACTIVITIES, ETC.)?

12. WHAT HAVE YOU DONE ABOUT IT?

13. WHAT CHANGES HAVE OCCURRED AS A RESULT OF YOUR ACTIONS?

14. HAVE YOU CONSULTED ANYONE ON THIS (TEACHER, PHYSICIAN, CLERGYMAN, PSYCHOLOGIST, ETC.)?

15. WHAT CHANGES DID YOU MAKE AS A RESULT OF THIS CONSULTATION (AT HOME, SCHOOL, OR ELSEWHERE)?

16. HOW DO OTHER CHILDREN (BROTHERS, SISTERS, FRIENDS, ETC.) RESPOND TO THE CHILD'S BEHAVIOR?

17. HOW DOES THE CHILD REACT TO THIS/THESE RESPONSE(S)?

18. IS THERE ANYTHING THAT CAN BE DONE AT SCHOOL WHICH WOULD IMPROVE THE SITUATION AT HOME?

19. DO YOU HAVE ANY SUGGESTIONS ABOUT THE BEST WAY TO RESOLVE THE PROBLEM(S) AT SCHOOL?

20. WHAT QUESTIONS DO YOU THINK SHOULD BE ANSWERED DURING THE ASSESSMENT PROCESS?

PRODUCTS OF REFERRAL STAGE INTERVIEWS

- * BEHAVIORAL INFORMATION ABOUT WHAT THE CHILD DOES WHICH THE REFERRAL SAYS THE CHILD SHOULD NOT DO.
- * BEHAVIORAL INFORMATION ABOUT WHAT THE CHILD DOESN'T DO WHICH THE REFERRAL SAYS THE CHILD SHOULD DO.
- * CIRCUMSTANCES UNDER WHICH THE PROBLEM(S) IS/ARE PERCEIVED.
- * FREQUENCY AND DURATION OF PROBLEM EPISODES.
- * DESCRIPTION OF THE ENVIRONMENT FROM WHICH THE CHILD WAS REFERRED: ALSO OTHER SETTINGS.
- * DESCRIPTION OF EFFORTS WHICH HAVE BEEN MADE TO RESOLVE PROBLEM(S).
- * LIST OF SPECIFIC OR GENERAL ASSESSMENT QUESTIONS.

REFERRAL INTERVIEW EFFECTIVENESS FACTORS

SPECIFICITY AND DESCRIPTIONS OF INFORMATION

- * REGARDING THE REASONS FOR REFERRAL
- * REGARDING PAST AND CURRENT EDUCATION PROGRAMS
- * REGARDING ENVIRONMENT (SCHOOL, HOME) AND PERSONEL (SOCIAL, EMOTIONAL, ETC.) ASPECTS FROM WHICH THE STUDENT WAS REFERRED

PRE-ASSESSMENT CONFERENCE EFFECTIVENESS FACTORS

- ORGANIZATION AND DIRECTION PROVIDED BY THE CHAIRPERSON
- TONE OF THE MEETING ESTABLISHED BY THE CHAIRPERSON
- MANAGEMENT OF DISCUSSION THROUGHOUT THE MEETING

CHARACTERISTICS OF GOOD ASSESSMENT QUESTIONS

IS THE QUESTION RELEVANT TO A LEGITIMATE CONCERN OR PROBLEM?

IS THE QUESTION ANSWERABLE?

WILL THE ANSWER TO THE QUESTION RESULT IN INFORMATION USEFUL TO DEVELOPING AN INTERVENTION OR DETERMINING ELIGIBILITY?

ASSESSMENT INTERVIEWING

- ONE OF MANY ASSESSMENT PROCEDURES
- A CLINICAL, JUDGMENT-MEDIATED METHOD
- USED WHEN INTERVIEWING IS THE MOST EFFICIENT METHOD TO GATHER ACCURATE INFORMATION TO ANSWER AN ASSESSMENT QUESTION

ASSESSMENT INTERVIEW EFFECTIVENESS FACTORS

- EXTENT OF UNDERSTANDING BY INTERVIEWER OF THE ISSUES AND CIRCUMSTANCES WHICH PROMPTED THE ASSESSMENT QUESTIONS
- EXTENT OF SENSITIVITY TO THE ENVIRONMENT AND SOCIAL CONTEXTS WITHIN WHICH THE CONCERN EMERGED REGARDING THE ASSESSMENT QUESTION
- EXTENT OF UNDERSTANDING BY THE PERSON BEING INTERVIEWED OF THE ISSUES AND CIRCUMSTANCES WHICH PROMPTED THE ASSESSMENT QUESTION

MENTAL RETARDATION

"'MENTAL RETARDATION' MEANS SIGNIFICANTLY SUB-AVERAGE GENERAL INTELLECTUAL FUNCTIONING EXISTING CONCURRENTLY WITH DEFICITS IN ADAPTIVE BEHAVIOR AND MANIFESTED DURING THE DEVELOPMENTAL PERIOD, WHICH ADVERSELY AFFECTS A CHILD'S EDUCATIONAL PERFORMANCE." (P.L. 94-142)

ELIGIBILITY QUESTIONS

1. IS THE STUDENT SIGNIFICANTLY SUB-AVERAGE IN INTELLECTUAL FUNCTIONING?

2. ARE THERE CONCURRENT DEFICITS IN ADAPTIVE BEHAVIOR?

3. DOES THE SIGNIFICANT SUB-AVERAGE INTELLECTUAL FUNCTIONING AND IMPAIRED ADAPTIVE BEHAVIOR SIGNIFICANTLY AFFECT EDUCATIONAL PERFORMANCE?

DEFINITION: SERIOUSLY EMOTIONALLY DISTURBED

FOUR DIMENSIONS:

1. CONDITIONS
2. TO A MARKED DEGREE
3. OVER A LONG PERIOD OF TIME
4. ADVERSELY AFFECTS EDUCATIONAL PERFORMANCE

14 MEASURABLE ELEMENTS:

1. INABILITY TO LEARN NOT EXPLAINED BY INTELLECTUAL FACTORS
2. INABILITY TO LEARN NOT EXPLAINED BY HEALTH FACTORS
3. INABILITY TO LEARN NOT EXPLAINED BY SENSORY FACTORS
4. INABILITY TO BUILD OR MAINTAIN SATISFACTORY INTERPERSONAL RELATIONSHIPS WITH PEERS
5. INABILITY TO BUILD OR MAINTAIN SATISFACTORY INTERPERSONAL RELATIONSHIPS WITH TEACHER
6. INAPPROPRIATE BEHAVIOR UNDER NORMAL CIRCUMSTANCES
7. INAPPROPRIATE FEELINGS UNDER NORMAL CIRCUMSTANCES
8. GENERAL OR PERVASIVE MOOD OF UNHAPPINESS OR DEPRESSION
9. TENDENCY TO DEVELOP PHYSICAL SYMPTOMS ASSOCIATED WITH PERSONAL PROBLEMS
10. TENDENCY TO DEVELOP PHYSICAL SYMPTOMS ASSOCIATED WITH SCHOOL PROBLEMS
11. TENDENCY TO DEVELOP FEARS ASSOCIATED WITH PERSONAL PROBLEMS
12. TENDENCY TO DEVELOP FEARS ASSOCIATED WITH SCHOOL PROBLEMS
13. AUTISM
14. SCHIZOPHRENIA

INSTANT REPLAY #2

1. a) AMOUNT AND DESCRIPTIVENESS OF INFORMATION FROM THE REFERRAL STAGE

   b) AVAILABILITY OF USEFUL INFORMATION ABOUT THE CONTEXT OF THE REFERRAL

   c) EXTENT OF USEFUL INFORMATION ABOUT PRE-REFERRAL ATTEMPTS TO RESOLVE REFERRAL PROBLEMS

   d) EXTENT TO WHICH THE REFERRAL TO PLACEMENT PROCESS IS VIEWED AS APPROPRIATE AND USEFUL BY PARENTS, TEACHERS, ADMINISTRATORS, STUDENTS, ETC.

2. a) BEHAVIORAL INFORMATION ABOUT WHAT THE STUDENT SHOULD NOT DO

   b) BEHAVIORAL INFORMATION ABOUT WHAT THE STUDENT DOES BUT SHOULD NOT BE DOING

   c) CIRCUMSTANCES UNDER WHICH THE PROBLEM(S) ARE PERCEIVED

   d) FREQUENCY AND DURATION OF PROBLEM EPISODES

   e) DESCRIPTION ON THE ENVIRONMENT FROM WHICH THE CHILD WAS REFERRED

   f) DESCRIPTION OF EFFORTS WHICH HAVE BEEN MADE TO RESOLVE PROBLEM(S)

   g) LIST OF SPECIFIC OR GENERAL ASSESSMENT QUESTIONS

WORKBOOK FOR IBA

INTERVIEWING (Your Definition):

If assessment is to have a satisfactory outcome, it must have a satisfactory beginning--by determining the question(s) to be answered in assessment and discovering the situation(s) which make the questions necessary.

EXAMPLES:

THE REFERRAL TO PLACEMENT PROCESS: A CONTEXT FOR INTERVIEWING:

1. Referral Stage
2. Pre-Assessment Stage
3. Assessment Stage
4. I.E.P. Design Stage
5. Placement Stage

DECISIONS AND ISSUES

REFERRAL STAGE

PRE-ASSESSMENT STAGE

ASSESSMENT STAGE

I. E. P. DESIGN STAGE

PLACEMENT STAGE

INTERVIEWING: DEFINITION

FORM OR STRUCTURE

I____I

Unstructured Structured

CONTENT

TWO IMPORTANT ASPECTS

1.

2.

EXAMPLES:

INTERPERSONAL RELATIONSHIP

Factors related to success

1.
2.
3.
4.
5.

Most important time:

LISTENING: SOME HELPFUL RULES

1.

2.

3.

4.

5.

6.

7.

THE TWO IMPORTANT PURPOSES OF INTERVIEWING ARE:

1.

2.

ASSUMPTIONS UNDERLYING INTERVIEW BASED ASSESSMENT

DECISION MAKING

A.

B.

C.

D.

E.

QUESTIONS -- 4 Classes

1.

2.

3.

4.

TYPES OF QUESTIONS

SOURCES OF INFORMATION

INFORMATION NEEDED	SOURCES

RELIABILITY

VALIDITY -- Two types

1.

2.

ROUGH CHECKS FOR RELIABILITY/VALIDITY

INSTANT REPLAY 1

WHAT ARE THE 5 STAGES IN THE PROCESS THAT SERVES AS A CONTEXT FOR INTERVIEWING?

1.

2.

3.

4.

5.

NAME THE TWO IMPORTANT PURPOSES FOR INTERVIEWING:

1.

2.

LIST THREE OF FIVE ASSUMPTIONS DISCUSSED:

1.

2.

3.

THERE ARE FOUR ROUGH CHECKS FOR RELIABILITY/VALIDITY.

NAME THEM:

1.

2.

3.

4.

REFERRAL FORM

Today's Date 2/14/80

Name David

Date of Birth 12/9/70

Sex Male

School Middletown Elementary

Grade 2

Teacher(s)

Reason for Referral: David can't read

Describe specific educational/behavioral problems: He is not having trouble in math, but his reading is on a low first grade level. He knows his sounds, but cannot learn sight words. He is disruptive and gets out of his seat without permission. He talks out constantly, gets into fights. He is disorganized and has a quick temper.

LIST STRATEGIES USED TO ENHANCE STUDENT ACHIEVEMENT AND/OR CLASSROOM BEHAVIOR: I've worked with him individually. So has the Title I teacher, but she says he is not eligible for the program and doesn't have any other ideas.

CURRENT EDUCATIONAL FUNCTIONING: He is failing reading but making satisfactory in math. His Gates MacGintie scores are (5/78) Vocab--no score, Comprehension--1.4; (2/79) Vocab--no score, Comp.--1.4; (10/79) Vocab--1.6, Comprehension--1.5

RESULTS OF GENERAL VISION, HEARING, AND MEDICAL SCREENING: The nurse reports that he is okay on everything

Signatures:

FACTORS Impacting the Quality and Utility of Referrals:

1) ____

____

2) ____

____

3) ____

____

4) ____

____

GENERAL REFERRAL QUESTIONS FOR THE TEACHER

1. In your judgment, is there anything in the child's behavior or appearance to raise concerns (vision, hearing, development and maturity compared to peers, problems of adjustment compared to peers, other problems)?
2. What does the child like? How do you know this?
3. What doesn't the child like? How do you know this?
4. What does this child do well? How do you know this?
5. What does the child do that you believe s/he should NOT do?
6. What doesn't the child do which you believe s/he should do?
7. From among the concerns regarding this child that you have noted, which do you consider most important?

FOLLOW-UP QUESTIONS FOR TEACHER-NOTED CONCERNS (May be used for three most important concerns if time permits):

8. How long have you been aware of this concern?

9. How often have you been aware of this concern?

10. Under what conditions has this been noticed by you (time of week or day, where, during what activities, etc.)?

11. What have you done about it?

12. What changes occurred as a result of these activities?

13. Who have you consulted about this (parents, counselor, physician, clergyman, psychologist, etc.)?

14. What changes have been made as a result of this consultation? At home or elsewhere?

15. How do other children in the classroom (or elsewhere) respond to ________________'s (the child's) behavior?

16. How does the child react to their responses?

17. What would you like to see tried in the class and in school which has not been tried already?

18. What specific help could you use in the classroom to help this child to succeed?

19. What specific types of service or program does this child need in order to resolve the issue identified in this child's case?

20. What questions would you like answered during the assessment process that would help assure the child's success at home, school, or play?

REFERRAL INTERVIEW GUIDE--TEACHER AND OTHERS

1. Introduce yourself and:

   a. acknowledge the referral
   b. when appropriate, explain the referral to placement process.

2. Thoroughly discuss the reasons for the referral and note them on the "Assessment Design Worksheet." Determine what other sources of information may be available through others who have worked with the teacher and/or child. (Note: Be certain to obtain written parental permission prior to any actual consultation with these sources of information.)

3. Determine whether in the teacher's (or other persons') judgment there is anything about the child's appearance or behavior to raise concerns about:

   a. problems of vision.
   b. problems of hearing.
   c. problems of health.
   d. problems of nutrition.
   e. problems of development and maturity.
   f. problems of adjustment.
   g. other problems.

   Record this information in Section II of the Worksheet. Discuss issues with the teacher (and others) regarding the child's likes and dislikes. Record this information in Section III of the Worksheet.

   Beyond the topics identified above, determine what other concerns (particularly those directly related to the reasons for referral) the teacher (and others) have and describe these in Section IV of the Worksheet in terms of "What does the child do which the teacher (and others) believes he/she should not do?" "What doesn't the child do which the teacher (and others) believes he/she should do?"

   On the "Follow-Up Worksheet", pursue each of the three concerns raised by the teaacher (and others) in Sections II, III, and IV.

After thoroughly discussing each of the three concerns and completing the information on the "Follow-Up Worksheet" thank the teacher (or others) and determine some convenient times and locations when and where the teacher (and others) can participate in a pre-assessment conference. Be sure to explain the purpose and importance of the conference in determining the assessment priorities and questions which the assessment process should address.

Suggested

ASSESSMENT DESIGN WORKSHEET

Teachers and others

Child's name ______________________ Date of referral ______________

Person who referred child ______________________

SECTION I

Interviewer ______________________ Teacher or other person ______________________

Child's age ________ Date of Birth ____________ M ______ F ______

Reasons for referral:

____

____

____

____

____

____

SECTION II

General Areas of Teacher's (or other person's) concern

"IN YOUR JUDGMENT, IS THERE ANYTHING IN THE CHILD'S APPEARANCE OR BEHAVIOR TO RAISE CONCERNS?" Check yes or no. (If yes, reference the concern in Section V of the Worksheet in terms of what the child does or does not do.)

"PROBLEMS OF VISION?" _____ yes _____ no

"PROBLEMS OF HEARING?" _____ yes _____ no

"PROBLEMS OF DEVELOPMENT AND MATURITY, COMPARED TO PEERS?" _____ yes _____ no

"PROBLEMS OF ADJUSTMENT, COMPARED TO PEERS?" _____ yes _____ no

"OTHER PROBLEMS?" (please specify) _____ yes _____ no

SECTION III

Other general questions should include:

1. "WHAT DOES THE CHILD LIKE? HOW DO YOU KNOW THIS?"
2. "WHAT DOESN'T THE CHILD LIKE? HOW DO YOU KNOW THIS?"
3. "WHAT DOES THE CHILD DO WELL? HOW DO YOU KNOW THIS?"

SECTION IV

Teacher's (or other person's) concerns:

"WHAT DOES THE CHILD DO THAT YOU BELIEVE S/HE SHOULD NOT DO?"

1. ______________________________
2. ______________________________
3. ______________________________
4. ______________________________

"WHAT DOESN'T THE CHILD DO WHICH YOU BELIEVE S/HE SHOULD DO?"

1. ______________________________
2. ______________________________
3. ______________________________
4. ______________________________

"NOW FROM AMONG THE CONCERNS REGARDING THIS STUDENT THAT YOU HAVE NOTED FOR ME, WHICH DO YOU CONSIDER MOST IMPORTANT?" (Review the concerns, if necessary. Transfer the three concerns to separate follow-up Worksheets.

FOLLOW UP WORKSHEET

Teachers and others

Use this form to follow up on each of the three primary concerns (one form for each concern) identified in Sections II, III, and IV.

Concern: ____________________

"FOR HOW LONG HAVE YOU BEEN AWARE OF THIS?" ____________________

"HOW OFTEN HAVE YOU BEEN AWARE OF THIS?" ____________________

"UNDER WHAT CONDITIONS HAS THIS BEEN NOTICED BY YOU?" (time of week or day, where, during what activities, etc.)

"WHAT HAVE YOU DONE ABOUT THIS?" ____________________

"WHAT CHANGES OCCURRED AS A RESULT OF THESE ACTIONS?" ____________________

"WHO HAVE YOU CONSULTED ABOUT THIS?" (parents, doctor, clergyman, psychologist, etc.)

"WHAT CHANGES WERE MADE AS A RESULT OF THIS CONSULTATION? AT HOME OR ELSEWHERE?"

"HOW DO OTHER CHILDREN IN THE CLASSROOM (OR ELSEWHERE) RESPOND TO ______________'s (the child's) BEHAVIOR?"

"HOW DOES THE CHILD REACT TO THEIR RESPONSES?" ________________________

"WHAT WOULD YOU LIKE TO SEE TRIED IN THE CLASS AND IN THE SCHOOL WHICH HASN'T BEEN TRIED?"

"WHAT SPECIFIC HELP COULD YOU USE IN THE CLASSROOM TO HELP THIS CHILD TO SUCCEED?"

"WHAT SPECIFIC TYPES OF SERVICE OR PROGRAM DOES THIS CHILD NEED IN ORDER TO RESOLVE THE ISSUE IDENTIFIED IN THIS CASE?"

"WHAT QUESTIONS WOULD YOU LIKE ANSWERED DURING THE ASSESSMENT PROCESS THAT WOULD HELP ASSURE THE CHILD'S SUCCESS AT HOME, SCHOOL, OR PLAY?" (Note: this question only needs to be answered once, not for every concern, but since each concern, when addressed separately, may raise additional questions, it is listed here for each concern.)

1. ____________________

2. ____________________

3. ____________________

4. ____________________

5. ____________________

ROLES FOR SIMULATION

Second Grade Teacher

You have 27 children, including David. You have consulted the parents, the principal, the first-grade teacher, and the Title I reading teacher with whom David spends 45 minutes each day. You are frustrated and angry. Everyone "understands" your problem. No one has been able to help. David's continued frustration in learning to read has resulted in an attitude of "I won't try." He is making it very difficult to control the environment in the class. He hasn't hurt anyone yet. He has intimidated the other children and he has been hurt himself in a fight on the playground.

- -

Mother

You are overwhelmed. David is your youngest and you worry about him. At home, you and your husband fight "verbally" much of the time. You are passive but protective about David. You don't open up easily and share your feelings. You don't really see much difference between David's behavior at home and that of your other children. He does have to defend himself because he is the youngest, but that's normal as you see it. You have no more nor less control over David than any of the other children.

- -

Father

You are angry and frustrated. Employment has been sporadic and you are currently on unemployment and welfare. You find it hard to concentrate on earning a living and also "dealing" with these problems. You are willing to help, however, if someone would suggest something specific. You fight with your wife at home. Much of that tenseness results from your feeling that she should be handling the management of the children.

- -

Roles for Simulation, Continued

David

You are a bit frightened. School has been lousy. Reading is a big problem and an embarrassment. All your brothers and sisters can read. They have laughed at your "baby" books. Other kids at school do better than you. You can fight "pretty well", but you get scared too. You would rather play or watch television. You especially like the "Dukes of Hazzard" and "B.A.D. Cats" because they are about cars. Math is better than reading because you can do things and get about as many right as the other kids.

OBSERVATION NOTES:

Listening Skills:

Recording Skills:

Clear Communication:

GENERAL REFERRAL QUESTIONS FOR THE PARENT

1. In your judgment, is there anything in your child's behavior or appearance to raise concerns (vision, hearing, development and maturity compared to peers, adjustment compared to others, other problems)?
2. What are your child's likes? Give Examples.
3. What are your child's dislikes? Give Examples.
4. What are your child's successes? Give Examples.
5. What hopes or ideas do you have for your child?
6. What are the behaviors that your child does which you wish that s/he would NOT do?
7. What are the behaviors that your child does NOT do which you wish s/he would do?
8. From among the concerns you have given regarding your child, which one (or more) do you consider the most important?

FOLLOW-UP QUESTIONS FOR PARENT-NOTED CONCERNS

(May be used for three most important concerns if time permits)

9. How long have you been aware of this?
10. How often have you noticed it?
11. Under what conditions have you noticed this (time of week or day, where, during what activities, etc.)?
12. What have you done about it?
13. What changes have occurred as a result of your actions?
14. Have you consulted anyone on this (teacher, physician, clergyman, psychologist, etc.)?
15. What changes did you make as a result of this consultation (at home, school, or elsewhere)?
16. How do other children (brothers, sisters, friends, etc.) respond to the child's behavior?
17. How does the child react to this/these response(s)?
18. Is there anything that can be done at school which would improve the situation at home?
19. Do you have any suggestions about the best way to resolve the problem(s) at school?
20. What questions do you think should be answered during the assessment process?

REFERRAL INTERVIEW GUIDE--PARENT (and student when appropriate)

1. Introduce yourself and:

    a. acknowledge the referral
    b. explain the "referral to placement" process and the importance of the parents, students, and family in making decisions regarding efforts on behalf of the child.
    c. provide written information and explain the rights of the parents and the child under state and federal law.

2. Thoroughly discuss the reasons for the referral and note them on the "Assessment Design Worksheet." Determine what other sources of information may be available through others who have worked with the parents and/or child. For each source, obtain written parental permission to consult (interview) these persons regarding the child's needs and any other information which would contribute to the design of the assessment.

3. Determine whether in the parents' or student's judgment, there is anything about the child's appearance or behavior to raise concerns about:

    a. problems of vision
    b. problems of hearing
    c. problems of health
    d. problems of nutrition
    e. problems of development and maturity
    f. problems of adjustment
    g. other problems

    Record this information in Section II of the Work Sheet. Discuss issues with the parents (and with the student) regarding the child's likes and dislikes as well as the parent's hopes and expectations for the child. Record this information in Section III of the Work Sheet.

    Beyond the topics identified above, determine what other concerns (particularly those directly related to the reasons for referral) the parents (and student) have and describe those in Section IV of the Work Sheet in terms of "What does the child do which the parents (and student) believe he/she should not do?" "What doesn't the child do which the parents believe he/she should do?"

On the "Follow-up Worksheet," pursue each of the three primary concerns raised by the parents (and student) in Sections II, III, and IV.

After thoroughly discussing each concern and completing the information on the "Follow-up Worksheet," thank the parents and student and determine some convenient times and locations when and where the parents (and student) can participate in a pre-assessment conference. Be sure to explain the purpose and importance of the conference in determining the assessment priorities and questions which the assessment process would address.

ASSESSMENT DESIGN WORKSHEET

For Parent

Child's name
Date of referral

Person who referred the child

SECTION I

Parent(s) interviewer
Parent(s) name(s)

Child's age
Date of birth
M
F

Reasons for referral (background narrative)

SECTION II

General Areas of Parent Concern

"IN YOUR JUDGMENT, IS THERE ANYTHING IN YOUR CHILD'S APPEARANCE OR BEHAVIOR TO RAISE CONCERNS?" Check yes or no. (If yes, reference the concern in Section V of the Worksheet in terms of what the child does or does not do.)

"PROBLEMS OF VISION?" ____ yes ____ no

"PROBLEMS OF HEARING?" ____ yes ____ no

"PROBLEMS OF DEVELOPMENT AND MATURITY?" ____ yes ____ no

"PROBLEMS OF ADJUSTMENT?" ____ yes ____ no

"OTHER PROBLEMS?" (specify) ____ yes ____ no

SECTION III

"WHAT ARE YOUR CHILD'S

1. LIKES (examples)?
2. DISLIKES (examples)?
3. SUCCESSES (examples)?
4. OTHER CONCERNS, HOPES, IDEAS?"

SECTION IV

Parents' Concerns: "WHAT ARE THE BEHAVIORS THAT YOUR CHILD DOES WHICH YOU WISH THAT S/HE WOULD NOT DO?"

1. ______________________________

____

____

2. ______________________________

____

____

3. ______________________________

____

____

4. ______________________________

____

____

"WHAT ARE THE BEHAVIORS THAT YOUR CHILD DOES NOT DO WHICH YOU WISH S/HE WOULD DO?"

1. ______________________________

____

____

2. ______________________________

____

____

"FROM AMONG THE CONCERNS YOU HAVE GIVEN REGARDING YOUR CHILD, WHICH THREE DO YOU CONSIDER THE MOST IMPORTANT?" (transfer the three concerns to separate worksheets).

FOLLOW UP WORKSHEET

Student's name ____

Use this form to follow up on the top three concerns identified in Sections II, III, and IV of the "Assessment Design Worksheet" (use one of these forms for each concern).

List the concern ____

____

____

"HOW LONG HAVE YOU BEEN AWARE OF THIS?"

"HOW OFTEN HAVE YOU NOTICED THIS?"

"UNDER WHAT CONDITIONS HAVE YOU NOTICED THIS?" (time of week or day, where, during what activities, etc.)

____

____

____

"WHAT HAVE YOU DONE ABOUT THIS?" ______________________

____

____

"WHAT CHANGES OCCURRED AS A RESULT OF YOUR ACTIONS?"

____

____

____

"HAVE YOU CONSULTED ANYONE ON THIS?" (teacher, doctor, clergyman, psychologist, etc.)

____

"WHAT CHANGES DID YOU MAKE AS A RESULT OF THIS CONSULTATION?" (at home, school, or elsewhere)

"HOW DO OTHER CHILDREN (brothers, sisters, friends, etc.) RESPOND TO THE CHILD'S BEHAVIOR?"

"HOW DOES THE CHILD REACT TO THIS/THESE RESPONSE(S)?"

"IS THERE ANYTHING THAT CAN BE DONE AT SCHOOL WHICH WOULD IMPROVE THE SITUATION AT HOME?" (e.g., Have someone talk with an older brother who picks on the child.)

"DO YOU HAVE ANY SUGGESTIONS ABOUT THE BEST WAY TO RESOLVE THE PROBLEM AT SCHOOL?" (e.g., what works at home?)

"WHAT QUESTIONS DO YOU THINK SHOULD BE ANSWERED DURING THE ASSESSMENT PROCESS?" (Note: this question only needs to be answered once, not for every concern, but each concern, when addressed separately, as it is in this process, may raise additional questions, so it should be at attended to each time at least by the interviewer.)

1. ____

2. ____

3. ____

4. ____

5. ____

GENERAL REFERRAL QUESTIONS FOR THE STUDENT

1. In your judgment, is there anything in your behavior or appearance which raises your concern (vision, hearing, development or maturity, adjustment, or other problems)?
2. What do you like?
3. What don't you like?
4. What do you do well? How do you know this?
5. Are there any hopes or ideas which you have for yourself?
6. What do you do that you wish you didn't do?
7. What don't you do which you knew you should do or that you wish you did?
8. From what you have mentioned as concerns or problems, which one (or more) do you consider the most important?

FOLLOW-UP QUESTIONS FOR THE STUDENT (May be used for the three most important concerns if time permits)

9. How long have you been aware or concerned about this?
10. How often have you noticed it?
11. Under what conditions has this been noticed by you?
12. What have your parents and/or school staff done about this?
13. What changes occurred as a result of these actions?
14. From whom have you asked for help?
15. What changes did you make as a result of this help?
16. How do other children/students (brothers, sisters, friends, etc.) respond to your behavior?
17. What could the school do which you believe would be helpful regarding your concern?
18. What specific types of services or programs do you believe you need in order to take care of the problem we are talking about?
19. What questions would you like answered during the assessment process that would help you be successful at home, school, or elsewhere?

ASSESSMENT DESIGN WORKSHEET

For Student

Student's name ______________________ Date of referral ______________________

Person who referred child ______________________

SECTION I

Student Interviewer ______________________

Student's perceptions of the reasons for referral

SECTION II

General Areas of Student Concern: (Special Note: These questions may be especially sensitive to a student. Rephrasing is encouraged where necessary. In some instances, it may not be appropriate to ask some of the questions.)

"IN YOUR JUDGMENT, IS THERE ANYTHING IN YOUR APPEARANCE OR BEHAVIOR THAT RAISES YOUR CONCERN?" Check yes or no. (If yes, reference the concern in Section V of the Worksheet in terms of what the child does or does not do.

"PROBLEMS OF VISION?" ____ yes ____ no

"PROBLEMS OF HEARING?" ____ yes ____ no

"PROBLEMS OF DEVELOPMENT AND MATURITY?" ____ yes ____ no

"PROBLEMS OF ADJUSTMENT?" ____ yes ____ no

"OTHER PROBLEMS?" (please specify) ____ yes ____ no

SECTION III

Other general questions should include

1. "WHAT DO YOU LIKE?"
2. "WHAT DON'T YOU LIKE?"
3. "WHAT DO YOU DO WELL?" HOW DO YOU KNOW THIS?"
4. "ARE THERE ANY OTHER CONCERNS, HOPES, OR IDEAS WHICH YOU WANT THE ASSESSMENT TEAM TO BE AWARE OF AS THEY PLAN THE EDUCATIONAL PROGRAM FOR YOU?"

SECTION IV

Student's concerns:

"WHAT DO YOU DO THAT YOU WISH YOU DIDN'T DO?"

1. ______________________________

2. ______________________________

3. ______________________________

4. ______________________________

"WHAT DON'T YOU DO WHICH YOU KNOW YOU SHOULD DO, OR THAT YOU WISH YOU DID?"

1. ______________________________

2. ______________________________

3. ______________________________

4. ______________________________

"NOW, FROM THE THINGS YOU HAVE MENTIONED AS CONCERNS OR PROBLEMS, WHICH THREE DO YOU CONSIDER THE MOST IMPORTANT?" (List the three concerns on separate follow-up worksheets.)

FOLLOW UP WORKSHEET

Student Name ____________________

Use this form to follow up on the top three primary concerns identified in Sections II, III, and IV of the Assessment Design Worksheet (use one of these forms for each concern).

List the concern ____________________

"HOW LONG HAVE YOU BEEN AWARE OR CONCERNED ABOUT THIS?"

"HOW OFTEN HAVE YOU BEEN AWARE OF THIS?" ____________________

"UNDER WHAT CONDITIONS HAS THIS BEEN NOTICED BY YOU?" (Time of week or day, where, during what activities, etc.)

"WHAT HAVE YOUR PARENTS AND/OR SCHOOL STAFF DONE ABOUT THIS?"

"WHAT CHANGES OCCURRED AS A RESULT OF THESE ACTIONS?"

"FROM WHOM HAVE YOU ASKED FOR HELP?" (Friend, doctor, clergyman, psychologist, etc.)

"WHAT CHANGES DID YOU MAKE AS A RESULT OF THIS HELP?"

"HOW DO OTHER CHILDREN/STUDENTS (brothers and sisters), friends, etc.) RESPOND TO YOUR BEHAVIOR?"

"WHAT COULD THE SCHOOL DO WHICH YOU BELIEVE WOULD BE HELPFUL REGARDING THIS CONCERN?"

"WHAT SPECIFIC TYPES OF SERVICES OR PROGRAMS DO YOU BELIEVE YOU NEED IN ORDER TO TAKE CARE OF THE PROBLEM WE ARE TALKING ABOUT?"

WHAT QUESTIONS WOULD YOU LIKE ANSWERED DURING THE ASSESSMENT PROCESS THAT WOULD HELP YOU BE SUCCESSFUL AT HOME, SCHOOL, OR ELSEWHERE?" (Note: this question only needs to be answered once, not for every concern, but since each concern, when addressed separately, may raise additional questions, it is listed here for each concern.)

1. ____________________

2. ____________________

3. ____________________

4. ____________________

5. ____________________

INTERVIEWING SKILLS: A SELF ASSESSMENT

As I think about myself as an interviewer, I would rate myself as:

	Mostly	Sometimes	Never
1. being authoritarian	______	______	______
2. conveying co-equal status to an interviewee	______	______	______
3. listening with empathy	______	______	______
4. being calm	______	______	______
5. asking questions which open further discussion rather than end it	______	______	______
6. considerate of parents' teachers' and others' vulnerability regarding a child's problem	______	______	______
7. responding judgmentally	______	______	______
8. having a clear grasp of the essential questions that need to be asked	______	______	______
9. understanding the ultimate decisions which must be made	______	______	______
10. using other terms to assist the interviewee to become more specific	______	______	______
11. adjusting style (directive/ nondirective) to accomodate the interviewee	______	______	______
12. acknowledging ideas, concerns, and information throughout the interview	______	______	______

OTHER SELF ASSESSMENT OBSERVATIONS:

____

____

PRODUCTS OF REFERRAL INTERVIEWS

1.

2.

3.

4.

5.

6.

7.

REFERRAL INTERVIEW EFFECTIVENESS FACTORS

Specificity and Descriptions of Information

1.

2.

3.

PRE-ASSESSMENT CONFERENCE EFFECTIVENESS FACTORS

1.

2.

3.

PRE-ASSESSMENT CONFERENCE GUIDE

1. Introduce yourself and the others at the meeting. (Include the role and function of each person.)

2. Review the reasons for referral and the concerns and questions which were identified during that stage of the process.

3. Ask the group to first address the questions which have already been raised:

    a. Are the questions clear to all participants? (e.g., restatement may be necessary)
    b. Are there any instant answers? (e.g., does any one member have actual information which answers the question of another?)
    c. Do any questions lack relevance? (e.g., Does any member of the group not understand the benefit of answering the question?)

4. Next, the group should be asked to address concerns which have been raised but are not yet in the form of questions.

    a. Restating the concern as a question or series of questions.
    b. Eliciting from the presenter of the concern their thoughts about the issue and determining their reason for presenting it.
    c. Determining that the concern has sufficient relevance to the assessment being designed.

5. After listing all assessment questions, the group should be asked to list them in relative priority.

6. Beginning with the first question, the group should propose options for answering the question and from these select one or more procedures. This process should be repeated for each question. Factors to be considered in this decision are:

    a. Accuracy (e.g., the likelihood that the method will directly answer the question).
    b. Stress or discomfort to the child
    c. The extent to which the answer relies on judgment versus data.

7. For each recommended procedure, the group should be asked for nominations. (While the group has no authority in this regard, their recommendations should be taken seriously.) Persons may nominate themselves as well as others not present at the conference.

8. Thank the group. Propose a tentative data for the I.E.P. Design Conference and assure them that they will be kept abreast of progress.

9. Provide the parent with a copy of the questions and proposed assessment methods. (A final copy should be mailed to the parent when all persons have been assigned.) The parents should be asked to sign the permission for assessment with an understanding that they retain the right to object to any as yet unnamed persons who may be proposed for carrying out specific procedures.

PRE-ASSESSMENT CONFERENCE

A Chairperson's Checklist

	yes	no
Have CONCERNS about the well being of the child been raised?	______	______
Has the PURPOSE been announced as the design of an assessment to determine the needs of the child and methods for meeting those needs?	______	______
Has each member of the committee participated sufficiently to reflect a variety of relevant perspectives?	______	______
Was a standard battery of tests avoided?	______	______
Is each assessment question answerable through available assessment methods?	______	______
Can the use of each assessment method be justified in terms of efficacy to answer the question and requirements for a valid, nondiscriminatory assessment?	______	______

Are there any changes that could be made to facilitate a more satisfactory preassessment conference:

Changes in preparation? ____

____

Changes in procedure? ____

____

Changes in my behavior? ____

____

FACTORS TO CONSIDER IN USING INTERVIEWING DURING THE ASSESSMENT STAGE

1.

2.

3.

EFFECTIVE FACTORS FOR USING INTERVIEWING DURING THE ASSESSMENT STAGE

1.

2.

3.

ANALYZING DEFINITIONS OF HANDICAPS
TO ESTABLISH MEASURABLE ELEMENTS

EXAMPLE: Mental Retardation (P.L. 94-142)

> "Mental Retardation" means significantly subaverage general intellectual functioning existing concurrently with deficits in adaptive behavior and manifested during the developmental period, which adversely affects a child's educational performance."

MEASURABLE ELEMENTS

1. "significantly subaverage intellectual functioning"
2. "deficits in adaptive behavior and manifested during the developmental period"
3. "adversely affects a child's educational performance"

EXAMPLE: Seriously Emotionally Disturbed (P.L. 94-142)

"1. The term means a condition exhibiting one or more of the following characteristics over a long period of time and to a marked degree, which adversely affects educational performance:

a. An inability to learn which cannot be explained by intellectual, sensory, or health factors;
b. An inability to build or maintain satisfactory interpersonal relationships with peers and teachers;
c. Inappropriate types of behavior or feelings under normal circumstances;
d. A general pervasive mood of unhappiness or depression; or
e. A tendency to develop physical symptoms or fears associated with personal or school problems.

2. The term includes children who are schizophrenic or autistic. The term does not include children who are socially maladjusted, unless it is determined that they are seriously emotionally disturbed.

DEFINITIONAL ELEMENT: The smallest possible measurable component within a definition.

LIST THE POSSIBLE DEFINITIONAL ELEMENTS WITHIN THE DEFINITION OF EMOTIONAL DISTURBANCE.

______________________	______________________
______________________	______________________
______________________	______________________
______________________	______________________
______________________	______________________
______________________	______________________
______________________	______________________
______________________	______________________

INSTRUCTIONS: Select several elements you have identified within the definition. List the elements in the left column and formulate questions which address each element. There may be more than one question per element.

Definitional elements	Eligibility Assessment Questions

INSTANT REPLAY 2

There are four factors which impact the quality and utility of referral data. Name two.

1. ____________________

____

2. ____________________

____

There are seven possible products at the referral stage. Name three.

1. ____________________

____

2. ____________________

____

3. ____________________

____

RESOURCE GUIDE FOR IBA

RESOURCE MATERIAL

Introduction

If assessment is to have a satisfactory outcome, it must have a satisfactory beginning—by determining the questions to be answered in assessment and by discovering the situation(s) which make the questions necessary. Interview-Based Assessment is a primary method for developing assessment questions. More than just a preliminary action, this particular form of interviewing is a parallel process to assessment in general where questions are generated and answered, other questions formulated and answered, etc. In this manner, the information derived from interviewing, coupled with professional judgment, structures the assessment process.

An Example

Interviews can be effective in answering certain questions under certain conditions. The following true and admittedly extreme story illustrates one condition where skillful interview procedures would have made a significant difference:

A certain 6-year-old boy entered school as a first grader. After several weeks of sincere and kindly effort, the teacher was unable to elicit any speech from the child. Consultation with the school psychologist and the speech therapist produced neither speech nor an understanding of the silence. Finally, a consultant psychiatrist who specialized in work with autistic children was employed to assist in diagnosing the problem. After considerable observation and testing, the psychiatrist concluded that the child was indeed "autistic" and could be best served in a separate facility for autistic children in a nearby community.

It was left to the social worker to obtain the cooperation of the child's mother. It was anticipated that her cooperation would not be easily achieved. There had been a history of confrontation and poor communication with this woman when her three older children attended school. The family was poor and the mother was rearing the children alone. She could neither read nor write. She had not been previously consulted about the child's lack of speech because it was believed that she would not have any information to contribute.

When the social worker came to her home to present an I.E.P. calling for placement in a separate school, the mother refused to sign the form. As predicted, she obviously was not capable of understanding the child's problems. The mother asked the social worker to get off her property.

On the following day, without any warning, the child's mother came to the school. As she stood in the doorway of her child's classroom, she observed the teacher interacting with her son by asking him to shake his head when she pointed to a certain color. The child merely stared at the teacher.

After watching this one-sided effort at communication for a few minutes, the child's mother strode to her child's side and said, "Jeffrey, you talk to the lady." There was a long moment of silence until the child said, "Yes, ma'am."

For a variety of reasons, the mother had never been asked whether the child could talk. While this is an extreme example, it is nevertheless a true story and it exemplifies the rationale for using interviews in the assessment of the children's needs.

The fundamental premise of interview procedures in non-test-based assessment is that someone has all or part of the information needed to answer a question.

The Referral to Placement Process: A Context

For purposes of non-test-based assessment, the use of interview procedures will be presented in terms of their usefulness in (1) managing the referral to placement process; and (2) assessing the individual needs of children for the purposes of determining a possible handicapping condition and proposing specific education and related service approaches.

The stages of referral to placement include:

Referral Stage

Pre-Assessment Stage

Assessment Stage

I.E.P. Design Stage

Placement Stage

In order to understand the value of interview procedures, it is helpful to consider the conceptual framework reflected in these five stages. Each stage represents a level of decision making.

Referral Stage - The primary decisions made at this stage respond to the following questions:

1. Is there a problem?
2. What assistance is needed
   a. to define the problem?
   b. to resolve the problem?
3. Should the current program continue intact?
4. Should other non-special education resources be utilized?
5. Should assessment for potential special education be requested?

Further, a decision can be made to meet the child's needs by continuing in the current or a comparable program with minor modifications. Finally, a decision can be made to conduct an assessment in order to decide what is an appropriate program for the child.

Pre-Assessment Stage - The primary decisions made at this stage respond to the following questions:

1. What are the assessment questions?
2. What are the priorities among these questions?
3. How can these questions be answered?
4. Which assessment procedures are most appropriate under the specific circumstances?
5. Who can carry out these procedures?
6. What entitlements and eligibilities can be used to finance assessment activities?
7. How will the assessment results and recommendations be communicated?

Assessment Stage - The decisions made at this stage respond to the following questions:

1. What are the answers to the assessment questions?
2. What eligibility questions should be addressed?
3. What other assessment procedures should be used to answer questions?

4. What other information is available which may assist in determining the child's educational and related service needs?

I.E.P. Design Stage - The decisions made at this stage respond to the following questions:

1. What are appropriate priority goals and objectives for the child, based on the answers to the assessment questions?
2. What are appropriate methods, materials, environments and staffing ratios for meeting these goals and objectives?
3. What are eligibility factors which can be utilized to provide an appropriate program?
4. If all or part of the recommended program is outside of regular education, what must occur for the child to return to the regular class setting?
5. What are the criteria for determining the success of the proposed program?
6. What are the staff development implications of this I.E.P.?

Placement Stage - The decisions made at this stage respond to the following questions:

1. What are the eligibilities which can be utilized?
2. Which resources can be assigned to implement this proposed program?
3. Where can the program be implemented in the "least restrictive manner"?
4. When can the program begin?

The program offered to parents for appropriately serving their child should be the result of a series of decisions made by responsible persons and supported by information which is current and relevant to those decisions.

Definitions of Interviewing

There are a variety of types of interviewing, all of which are designed to gather information. Will (1954) characterizes the interview as "the coming together of two people, one recognized as an expert in interpersonal relations, the other known as the client, interviewee, or patient, who expects to derive some benefit from a serious discussion of his (her) needs with this expert", (p. ix). There are a variety of resources which describe the various phases of interviewing in general (Burdock, 1969; Davis, 1971; Gill, Newmand, & Redlich, 1954; Gordon, 1975; Richardson, 1965; Shoulksmith, 1968; Sullivan, 1954). While there are many recognized forms of interviewing ranging from personnel selection to psychiatric crisis intervention, it is generally agreed that the principles of interviewing are similar regardless of the specific purpose and the professional conducting the interview (Haynes, 1978).

Peterson (1968), in his critical analysis of interviewing, conceptualizes the principles in three ways, namely, the form (or structure), the content, and the interpersonal relationship that predominates in the interview. The most common distinction in the form of interviews is structured versus unstructured. Rogers (1951) exemplifies the unstructured approach although he admittedly disavows any specific purpose to his form of interviewing. The epitome of the structured approach lies in the computer-based inquiry systems in which the informant or client supplies answers to machine-supplied questions.

Interview-based assessment, as it is presented in this module, is minimally structured. Each person interviewed is aware of the purpose of the interview and is asked similar preliminary questions. The information supplied by the person interviewed may lead to additional inquiry, answer a question by someone else, or lead to the interviewing of a previously unplanned person. In this manner the process and outcome of any interview of this type is highly flexible.

The content of the interview is characterized by the purpose and nature of the information solicited during the interviewing process. As defined for the context of non-test-based assessment, the purpose of interviewing is "for obtaining information about a child and his (her) environment(s)" (O'Leary, 1972, p. 258). The information obtained is used to facilitate referral-to-placement decisions, which will be described in the next section. Specific to facilitating decisions, the use of interviewing has two basic aspects:

1. to determine the assessment questions about a child that are of concern to interviewees and
2. to collect information to answer some of the assessment questions that are generated.

For example, when a teacher is interviewed regarding a referred student, the purpose is to formulate the concerns about the student into assessment questions and to elicit information about the student that might answer other assessment questions. Similarly, the parents are queried regarding their concerns, and information possibly useful in answering other questions is also collected.

Peterson (1968) notes that most traditional interviewing focuses on obtaining information that is seldom used in the intervention process. Common to the forms of all interviews he examined were history data, which are seldom useful. Contrary to that tradition, interview-based assessment focuses only on presenting concerns of those who have contact with a student and are selected as part of the interview process. The precise forms, including the questions, will be presented in Section 2—Collecting Data.

The interpersonal relationship created during an interview has an important impact both on the quality of the information and the future cooperation of the person in other aspects or stages of the assessment process. Obviously rapport and empathy are integral to the success of the interview (Sullivan, 1954). Reinforcement for both the person interviewed and the interviewer has also been noted as important (Haynes, 1978). The abilities to clearly communicate the purpose of the interview and accurately record responses are perhaps the most overlooked success factors.

Traditionally, the first five minutes of the interview are considered critical to success (Pfeiffer, 1968; Sullivan, 1954). Each person in the interview situation holds certain expectations regarding the interview and the purpose of the encounter. The initial presentation sets the stage or tone for the remainder of the meeting. By clearly stating why the interview is being conducted and the terms under which the information will be used (as noted in Section 2—Collecting Data) the person interviewed will be less likely to misperceive the nature of the relationship.

Listening is often characterized as the most essential skill in both building the interpersonal relationship and accurately collecting the data (Becvar, 1974; Delea-Diana, 1973; Carkhuff, 1969; Morganstern, 1976). Carkhuff and Pierce (1975) provide these helpful rules for listening:

1. Be aware of the reasons you are listening (to establish the relationship and store information);
2. Suspend your own judgment;
3. Focus on the person being interviewed;
4. Practice waiting 30 seconds before responding in any way to the person;
5. Practice repeating verbatim as a memory check;
6. Look for common themes in what the person says;
7. Reflect to yourself on the content of what the person says.

A special advantage to listening is highlighted by Morganstern (1976); "it focuses on the problems of the client, not the preconception of the (interviewer)" (p. 63).

In summary, interview-based assessment can be described as a flexible procedure which focuses on collecting information and developing assessment questions which will facilitate decisions throughout the referral-to-placement process. The interpersonal relationship created during the interview fosters both the acquisition of needed information and cooperation in future aspects of the referral-to-placement process.

Assumptions Underlying Interview-Based Assessment

When interviewing is used to facilitate decision making, several assumptions are important. First, the concerns that people express regarding a student can be formulated into answerable questions which are the primary focus of the assessment. Second, the information required to answer many of the questions is consciously or unconsciously available (all or in part) from the persons being interviewed. The possibilities regarding the desired information are limited to six options:

1. Persons have and are aware of the information.
2. Persons have but are unaware of the information.
3. Persons have partial information.
4. Persons have inaccurate information.
5. Persons are withholding information.
6. Persons know who has all or part of the information.

Third, the effectiveness of the interview can be determined by the quality of the assessment questions formulated and the related information. Fourth, time spent interviewing the relevant people concerned with a student will increase the effectiveness of the assessment and the cooperation of everyone concerned. Fifth, multiple concerns or questions are the rule rather than the exception.

The Role of Questions

Questions may be thought of in two ways. A question is a method for eliciting information; it also expresses a concern or curiosity. Obviously, questions have other qualities that are not pertinent for purposes of interviewing. Some questions are rhetorical. Others are so vague as to simply raise more vague questions.

Questions as used in interview-based assessment are of four classes:

1.*Open-ended questions* for information, as described initially. The purpose of the questions is to provide opportunities for expression and to probe for information. In this manner, each person interviewed participates in the assessment process.

2. *Specific questions* developed through the process of interviewing to be answered during the assessment process. The answers may come from other interviews, observations, or informal and formal testing.

3. *Decision questions* are directed to those who must take actions during the referral-to-placement process. Whether or not a child receives a particular program or is assigned to a particular teacher are answers to decision questions.

4. *Eligibility questions* are the most sensitive and controversial queries in the referral-to-placement process. Determining a student's eligibility for special education services as emotionally disturbed or learning disabled, etc. implies that questions based on state and federal regulations have been satisfactorily answered.

All questions can be classified into a number of types. Each type will require a particular kind of response. Listed below are the types of questions and the kinds of responses required by each type:

Type of Question	*Kinds of Response*
Who?	Names, titles, identifying descriptors.
What is it?	Nouns, definitions.
What is happening?	Verbs, behaviors.
Why?	
How?	Adverbs, adjectives, styles, methods.
When?	Times, dates, durations, frequencies.
Where?	Locations, situations.

Sources of Information

It would be pointless to ask questions that could not be answered. As the interviewer formulates the assessment questions and seeks additional information, there are several sources. A partial list of such sources follows:

Information needed	*Sources*
Child's behavior	Child, parents, siblings, teacher, other school staff, peers.
Child's school program	Child, teacher, aide, principal, other school staff, peers.
Child's home environment	Child, parents, siblings, relatives.
Assessment questions	Child, parents, siblings, teachers, other school staff, specialists.

Reliability and Validity

A reasonable issue in collecting interview data is the extent to which the information is reliable or valid. Reliability means the degree of stability or consistency over a period of time. In other words, will the information that the interviewer obtains from a person be consistent if the interview is conducted again; or if the same question is asked of another person? Reliability, a statistical index (Haynes, 1978), is rarely computed when interviews are conducted. Rather, interviewers often make judgments about the reliability or consistency of the information they gained. Although this is common, it is advisable to occasionally check reliability using procedures similar to those described by Haynes (1978).

Validity, a complex concept in psychology (Nunnally, 1978), addresses the question of whether or not the interview accomplishes what it is intended to do. For the purposes of interview-based assessment, validity can be considered in two ways. First, is the information obtained through the interview(s) sufficient to construct assessment questions and provide answers to some of the assessment questions (content validity)? Second, does the information derived from the interview relate to other information obtained in other aspects of the assessment (e.g., preliminary screening, formal testing, medical examination)? This represents criterion-related validity. These types of validity have seldom been examined in regard to interview-based assessment in the referral-to-placement process.

The use of interviewing in non-test-based assessment is essential to obtaining information from a variety of persons concerned with a particular child, including the child himself/herself. Interviewing also secures the direct participation of a variety of persons in the referral to placement process. The skill demonstrated by the interviewer in establishing relationships with those interviewed and in accurately recording the information will largely determine the effectiveness of the interview procedure.

COLLECTING INTERVIEW DATA

The use of interviewing in the referral to placement process occurs at two stages. First, the referral is an opportunity for the interviewing process to clarify the concerns of the person making the referral and elicit the participation of relevant people. Often, in clarifying the problem the solution is discovered without need for further action. When problems or concerns are specified through the interview, the development of assessment questions in the preassessment stage is facilitated.

The second use of interviewing is at the assessment stage. Following the development of assessment questions and the assignment of those questions to personnel during the preassessment or screening conference, interviewing may be the most appropriate method to develop an answer.

In this section, the use of interviewing at the referral stage and the development of assessment questions at the preassessment stage are emphasized.

Interviewing to answer assessment questions, a more traditional clinical procedure, is not addressed.

Referral Stage - Some factors which have an impact on the quality and utility of referral activities include:

1. The amount and descriptiveness of information from the source of referral (parent, student, teacher, other school staff, other agency, etc.) regarding the reasons for referral.
2. The availability of useful information about the current environment (regular class, other agency, home, etc.) as a context from which to consider the referral.
3. The amount of useful information about pre-referral attempts to resolve the referral problems.
4. The extent to which the referral-to-placement process is viewed as an appropriate and useful process by parents, teachers, principals, students, and others who might be involved.

In far too many instances, reasons for referral from parents, teachers, principals and other school staff are limited to comments such as "failure," "troublemaker," "immature," or "retarded." While these terms may have some meaning for the person using them, they do little to build a foundation for designing an individual assessment. Referral forms have been designed and redesigned without proving effective. Resistance to paperwork appears almost universal. Further, people vary in their ability to complete referral forms completely and concisely.

It is clear that interview techniques can help remedy this situation. It is also clear that interviews are a most effective technique in addressing the four factors listed above. It seems reasonable to assume that effective interviews elicit the information identified in the first three factors (i.e., reasons for referral, description of referring environment, and description of pre-referral activities). The remaining factor is addressed by clarifying communication and supporting people during the referral process—reasonable by-products of person-to-person interviews.

Skillful interviews of persons making referrals significantly improve the quality of information obtained at the referral stage. Properly conducted, these interviews deflect inappropriate modifications of regular class programs. Likewise, when referrals are appropriate, considerable time and effort can be saved by the skillful interviewer who elicits the information necessary for articulating assessment questions. The products of such interviews include:

1. Behavioral information about what the child does which the referring person believes the child should not do.
2. Behavioral information about what the child doesn't do which the referring person believes the child should do.
3. The circumstances under which a problem is perceived.
4. The frequency and duration of problem episodes.
5. A description of the environment from which the child is referred as well as other settings where the problems occur.
6. A description of efforts which have been made to resolve the problem.
7. A list of specific or general assessment questions about what the child needs and what can be done to respond to those needs.

From information acquired during the referral interviews, school personnel are prepared to establish the foundation for assessment by generating a preliminary list of assessment questions. While there are other important aspects of procedures for determining the needs of a child, none is more crucial to the ultimate success of assessment efforts than the establishment of assessment questions. This is the stage of the process where individualization begins. The focus of the assessment emerges when the school psychologist organizes the information obtained from referral interviews into a preliminary set of questions which reflect the priorities and concerns presented by parents, students, teachers, and others who have been interviewed during the referral stage. The products of these endeavors are quite different from the "standard" responses to referral. Using the personal contact of interviews, school personnel dramatically shape the direction, character, and ultimate benefits of the assessment process.

Since the essential justification for assessment activities is to provide a basis for making decisions about children, it is crucial that assessment efforts produce the information needed to make such decisions. These specific and individual information needs are not likely to be addressed for each child unless a careful and skillful effort is made to determine assessment questions. Without the intervention of skilled interviews that assist parents, students, teachers, and other staff in refining their concerns into specific assessment questions, assessment activities are likely to be perfunctory exercises which contribute little or nothing to the decisions which must be made.

GETTING READY TO INTERVIEW

Collecting Data at the Referral Stage

The primary purposes of referral activities are essentially:

1. To inform parents and students of their rights and the importance of their role in the referral to placement process and in the implementation of the students's educational program.
2. To determine the concerns of parents, student, teachers, and others regarding the well-being of the child.
3. To determine which persons besides the parents, student, and teacher may have relevant information about the child.
4. To obtain parental permission for consultation with others who may have relevant information about the child which may be helpful in the design of the individualized assessment.
5. To identify the general issues which should be addressed in the assessment process.
6. To determine which persons should participate at the pre-assessment stage.

Who should participate in referral activities? Obviously, parents, and teacher (and, more often than not, the student) should participate in referral activities because of their fundamental role in knowing and supporting the student. They most often have (but are not always aware of) the significant information necessary for designing the assessment. The necessity to interview other persons can be decided in discussion with the parents, student, and teacher (unless the referral came from another source). The appropriateness of the participation of others at the referral stage can only be determined by the information they may have about the student, the program, the student's environment, or the type of behavior causing the concern.

REFERRAL INTERVIEW EFFECTIVENESS FACTORS

Some of the more important factors which determine the effectiveness of referral interview activities are:

1. The specificity and descriptiveness of information about past or current programs and services.
2. The specificity of information regarding the reasons for referral (e.g., What the child does which the referring person believes the child should not do; what the child does not do which the referring person believes the child should do).
3. The specificity and descriptiveness of information about the environment from which the child is referred.

After a referral is made, a chairperson should be assigned to coordinate all aspects of the referral to placement process. This is a serious responsibility which includes assuring that:

(1) All due process rights of the parents and student are properly implemented; (2) timelines are met; (3) qualitative issues are properly addressed at each stage of the process; and (4) the participants in the process understand and are capable (with assistance if necessary) of carrying out their respective functions.

The first substantive contact with the parent, student, and teacher occurs at the referral stage. The person who interviews the parents and the teacher should be skilled in the use of interview procedures which elicit the essential information for assembling an assessment team.

Pre-Assessment Stage - Some factors which have an impact on the quality and utility of pre-assessment activities include:

1. The extent to which the various perceptions, concerns, fears, and ideas of those who are acquainted with or responsible for some aspect of the child's well-being are focused to help individualize the assessment process.
2. The degree to which issues proposed as appropriate for assessment have priority in terms of immediacy and effect on the overall growth and development of the child.
3. The extent to which criteria can be applied for evaluating the effectiveness and utility of specific assessment activities.
4. The degree to which parents and students participate in the design of assessment and consent for its implementation is informed and knowledgeable.

The sad truth is that most assessments administered in public schools are not individually designed at all. There are *no questions* and consequently there are *no answers*. A standard battery of tests is administered and scored. A decision is made regarding eligibility. A program (consistent with eligibility) is suggested and the person who administers the program is asked to write an I.E.P. Assessment is rarely the individually designed set of procedures envisioned in P.L. 94-142.

Where assessments are effectively managed, issues and concerns are clarified using a thoughtful and rigorously applied process of interviewing parents, students, teachers, principals, and others who have a relevant role in the life of the child. These interviews produce such specific assessment questions that criteria for determining the utility of answers derived from assessment activities can be established. Often priorities among the assessment questions must be established.

To build on the information obtained from the referral interviews and the preliminary assessment questions resulting from that process, a pre-assessment (or screening) conference is conducted to: 1) formulate specific prioritized assessment questions; 2) determine procedural options for answering the assessment questions; 3) select specific assessment procedures; and 4) prescribe the manner in which assessment results and recommendations will be presented to the persons responsible for designing the child's program.

Participants in this conference are persons who either have information about the child or the current environment, skill in refining general concerns into assessment questions, particular knowledge or experience of an issue raised during the referral stage, or other relevant knowledge or experience which could contribute to the design of an assessment for the child. Discussion during this conference is managed by a chairperson to assure that all persons are able to participate and contribute their concerns and ideas. No procedures for answering an assessment question are recommended by the group without a reasonable and specific justification for that particular method. The chairperson assists participants in the communication of their points of view by restating or questioning the meaning of any jargon, acronyms, or unduly technical language. Such a conference greatly enhances the usefulness of assessment practices and reduces the likelihood that children are improperly placed in programs which are not in their best interests.

In circumstances where such a conference is not feasible, the chairperson attempts to derive similar results by a series of telephone and face-to-face discussions with all concerned parties. While this approach is not as effective as a conference it represents a significant improvement over more traditional practices.

Collecting Data at the Pre-Assessment Stage

The primary goals at this stage are:

1. To compile the various concerns and questions of all persons who were interviewed about the child, the program, or the environment.
2. To refine individual or group concerns into questions which lend themselves to assessment.
3. To generate a prioritized list of assessment questions.
4. To identify various assessment methods which might provide answers to the assessment questions.
5. To select methods for answering the assessment questions.
6. To assign persons to carry out agreed upon assessment procedures.
7. To identify others (non-participants at the conference) who can be asked to implement certain agreed upon assessment procedures.
8. To obtain written parental permission for carrying out the assessments agreed upon during the conference.
9. To make arrangements for carrying out assessment.
10. To establish a time and place for the I.E.P. design conference.

Who should participate at the pre-assessment conference? It is clear that parents and teachers (and, quite often the student) are crucial to the successful pre-assessment conference. Their knowledge of the child as well as their capacity for clarifying assessment questions and implementing assessment methods assures them a pivotal role at this stage of the process. (Serious consideration should be given to including the child at every stage of the process. Obviously, the age of the child, the nature of the problem, and parental wishes have a bearing on this decision). Deciding other persons who should participate can best be accomplished by the chairperson or administrator based on the nature of the concerns and questions raised during the referral stage and by past experience in either translating concerns about children into assessment questions or providing answers which lead to methods for meeting specific educational goals. Consequently, relevance is the key to determining who should participate.

Pre-Assessment Conference Effectiveness Factors

There are certain factors which determine the effectiveness of pre-assessment conference activities.

1. The organization and direction provided by the chairperson must insure that all participants are aware of the location, time, and purpose of the conference and background information regarding the child which has been obtained during the referral stage.
2. The tone of the meeting established by the chairperson is important. The chairperson should insure that: a) concerns are focused on the well-being of the student; b) the group has been convened to undertake the serious task of designing an assessment to determine the needs of the child and method for meeting those needs; c) participation in the conference is based on the presumption of relevance for each member; d) there are no "standard" assessment procedures but rather assessment is based on questions which have been previously formulated for the individual child; e) each proposed assessment method is justified both in terms of its likelihood to answer questions and the impact of the approach upon the

child; and f) scores in and of themselves have no value in determining child needs.

3. The discussion throughout the meeting should be carefully managed by the chairperson to assure that all participants are able to express their thoughts without any one member dominating.

The role of the chairperson is critical not only in assuring that the legal provisions of state and federal law are properly carried out but also in determining the quality of the process. An important skill for the chairperson is the ability to assist the group in defining concerns in a manner that allows assessment questions to be developed as well as supporting the group in determining some priority to the assessment questions.

Finally, the assignment of persons to answer the questions is the important culmination of this pre-assessment process. When the parents are willing (with assistance if necessary), they represent an important and underutilized assessment resource. Further, it may be desirable for more than one person using different methods to attempt to answer the same question. While no one should be asked to carry out an assessment procedure if the necessary licensure or certification is lacking, no discipline has a monopoly on the questions themselves. The chairperson should encourage creative assessment suggestions as long as they have some face validity, and present no danger or undue stress to the child and family.

Choosing Assessment Procedures

Some factors which have an impact on the quality and utility of assessment procedures include:

1. The extent to which assessment questions are clear and the rationale for asking them is thoroughly understood.

2. The extent to which the rationale for each assessment procedure is clearly responsive to the question being asked.

3. The extent to which each selected assessment procedure is understood in terms of its reliability and validity (i.e., the relative weight given to inference vs. directly observable conclusions).

4. The extent to which the results attainable from the selected assessment procedures are likely to result in recommendations for an individual education program.

When assessment techniques are standard and routine, they often become disassociated from the desired and specific responses called for by carefully articulated assessment questions. Unfortunately, physicians are often asked to do "physicals" with little or no considerations as to why. Psychologists are asked to do "psychologicals" and social workers are requested to do "case histories." Considerable energy is expended performing routine procedures resulting in stock answers or no useful answers at all.

Assessment Stage

Some factors which have an impact on the quality and utility of assessment activities include:

1. The extent to which assessment procedures are carefully directed by precisely articulated questions whose answers can be expected to result in recommendations for goals, objectives, methods, materials, environments, eligibility, and other factors.

2. The extent to which assessment resources and energies are expended predominantly in learning about a child's needs and moderately on eligibility and funding issues.

3. The relative balance in assessment activities between examination of the child and analysis of current and potential programs and environments.

Despite the vast sum of public and private funds which has been expended in developing "model" interdisciplinary assessment procedures, the state of the art remains quite unsatisfactory (CORRC, 1977; Salvia & Ysseldyke, 1978). One fundamental conceptual flaw in many inter- and multi-disciplinary models is that they are based on an assumption of "discipline participation" without adequate regard to the issues which must be addressed—specifically the assessment questions. Consequently, many current practices are characterized by ritual rather than by differentially-designed assessments which could logically lead to nonbiased eligibility determination and recommendations for an I.E.P.

Good practice in assessment not only concludes with appropriate program recommendations in the least restrictive environment, but these recommendations logically flow from the answers to the assessment questions. The recommendations should reflect the need for behavioral goals for the child but also the modifications needed in school programs.

When possible, it is appropriate and efficient that the same person who has interviewed all of the concerned parties and has managed the process resulting in a prioritized list of assessment questions and procedures, should also coordinate the actual assessment activities. This person can minimize the requirements and paperwork for all other participants by assuring that assessment assignments are clear and are carried out in a timely and competent fashion. Based on the personal contacts gained from interviews and conferences, this person can assure a logical flow of events from referral through assessment to the actual implementation of a child's program. The same interview procedures used in communicating with individuals can also be employed in chairing all conferences relative to the assessment as well as in assigning and supervising assessment activities. However, some state and local policies require that an administrator chair screening and I.E.P. design meetings. In those instances, the person who has coordinated the assessment process can assist the administrator without preempting his/her authority.

Compiling Data after the Assessment Stage

Primary purposes at this stage are:

1. To determine the child's educational and related service needs.

2. To recommend objectives, procedures, materials, environments, and any other considerations necessary for meeting those needs.

3. To answer as specifically as possible the questions listed at the pre-assessment conference.

4. To specify any eligibility questions which should be answered in order for the child's needs to be met.

5. To provide the participants at the Individual Education Program design conference with all the information they need in order to produce an I.E.P. which will meet the educational and related service needs of the child.

Persons who have been assigned by the chairperson (directly or by contract) may participate in these activities. While the parent (and student) may not actually determine the participation of an individual, their preferences should be given serious consideration. If they lack confidence in a person or process, they may not feel comfortable with the recommendations which come from this effort.

Assessment Interview Effectiveness Factors

Some of the more important factors which determine the effectiveness of assessment interview activities are:

1. The extent to which the person assessing the child understands the issues and circumstances which prompted the assessment question.

2. The extent to which the assessment question is approached with a sensitivity to the environments and social contexts within which the concern emerged.

3. The extent to which the assessment question can be answered by obtaining information from other persons.

4. The extent to which the person being interviewed is

assisted in understanding the issues and circumstances which prompted the assessment question.

When choosing to use interview procedures in addition to standardized procedures several factors should be considered. It is likely that parents and teachers (and students themselves) will have the most accurate information about the student's behavior because they have the greatest opportunity to know. When they are asked about the behavior, they should be made aware of why the information is important. Further, patience must be employed because these individuals may not be accustomed to articulating ideas and information in "behavioral terms". The use of approximations at restating their ideas in behavioral terminology is a very effective technique. Also, discussions with others, such as siblings and other school staff, can contribute much to the accuracy and specificity of the information.

Information about the program from which the student has been referred can usually be obtained from the student, teacher, aide, principal, supervisors, and other school staff. While the teacher may have the most in-depth information, others may have useful perspectives in terms of how the student's program fits into the overall school program, ways in which it can be integrated with other school services, and other suggestions. It is important to conduct this interview as a "non-defensive analysis" of school efforts with an eye toward being flexibly responsive to children's needs. This is not a process of impugning teachers or suggesting a lack of staff competence. THE ASSUMPTION UNDERLYING THIS INTERVIEW EFFORT IS THAT ALL STAFF CARE AND ARE WILLING TO MAKE REASONABLE ACCOMMODATIONS TO MEET THE NEEDS OF CHILDREN.

Information about the child's home and other pertinent environments (e.g., neighborhood) can best be provided by parents, the student, and other family members. It is essential that such interviews avoid unnecessary intrusions into family privacy. If the family members understand the reasons for the assessment question, they are much more likely to be open to discussions about how the child responds to home and other environments. The teacher and other persons who have opportunities to observe the child may also have important insights into the issues involved in such assessment questions.

Information about the topic (e.g., reading, language development, emotional adjustment, etc.) is usually sought from specialists who, through experience and training, have information which could help answer certain assessment questions. It is important that such interviews not be substituted for direct observation and assessment of a child by a specialist when that is what is needed. Further, it is important to give consideration to the knowledge of others who may not be specialists but who have had experience or exposure to the issue being addressed (e.g., parents, teachers, etc.).

The obvious should not be overlooked as in the story of the child who wouldn't talk. Whenever it is appropriate, the child can be interviewed regarding behavior, program, home, or any other factor. Such interviews can eliminate much time and effort in getting answers to assessment questions.

Finally, it is important to note that no person conducting assessment activities may markedly deviate from the procedures already described to the parents without their knowledge and consent. Each assessment report should be concise as to procedures, results, and conclusions. Persons who conduct assessments may wish to keep extensive notes and records for their own purpose but the actual report should be brief and directly responsive to the questions. All members at the I.E.P. design conference should have copies of all reports prior to the I.E.P. design meeting so as to be familiar with their content.

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CURRICULUM BASED ASSESSMENT (CBA)

By Edward E. Gickling & John Havertape

USER'S GUIDE FOR CBA

USAGE SUMMARY

Rationale

The Curriculum Based Assessment Workshop is one of three non-test-based data collection procedures presented in the Non-Test-Based Assessment Module. Within education, no variable has received more attention or been the object of more frustration for teachers and students than curriculum tasks. Likewise, no variable has been more open to daily student/peer comparison than the number of assignments that students receive in their classrooms. A routine examination of such assignments generally shows that even though a majority of students perform satisfactorily, the outputs of many students still remain inadequate in one curriculum aspect or another when compared to those of their peers. Because of this inability to keep pace and their needs for special help, these students could rightfully be called the "casualties" of regular curriculum programs. The purpose of this Curriculum Based Assessment Workshop is to provide a continuing education experience for school psychologists, diagnosticians, other assessment professionals, and teachers in selecting curriculum tasks that will match the curriculum needs of their students.

User

This section is one component of the module on NON-TEST-BASED ASSESSMENT. It can be presented either before or after the other workshop sections on INTERVIEWING and OBSERVATION SKILLS, or it can be used independently (i.e., it is not necessary for the learner to complete all of the sections in the module to acquire the skills taught in this component.)

Directions to Presenter

Although a script is presented, the presenter should be familiar enough with the workshop so that this script is not "read" to participants. The session will be far more interesting if presenters make the workshop their own, modifying the script and examples to suit their individual styles.

CURRICULUM BASED ASSESSMENT WORKSHOP OBJECTIVES

Upon completion of this Curriculum Based Assessment workshop, the participants will be able to:

1. Identify students who are possible "curriculum casualties."
2. Recognize the sequence and major steps of the assessment cycle.
3. State the major factors affecting the instructional match of task difficulty with student performance.
4. Define curriculum based assessment.
5. Apply an instructional delivery model including task types, task items, performance levels and basic rules.
6. Understand the basic learning principle of discriminative stimuli.
7. Use competency testing.
8. Examine reading scope and sequence for reading programs.
9. Apply an instructional delivery model for reading.
10. Examine mathematics scope and sequence for mathematics programs.
11. Apply an instructional delivery model for mathematics.
12. Monitor progress in instructional delivery.

To meet these objectives, the learner will:

- —complete the worksheets for the curriculum based assessment workshop
- —participate in simulation activities
- —meet 90% criterion on written instant replay activities concerning information and application of the workshop content

CONTENT OUTLINE

- I. A RATIONALE FOR CURRICULUM BASED ASSESSMENT
  - A. Curriculum Casualties—the basic focus
  - B. The Assessment Cycle—areas of input
  - C. The Instructional Match
    - 1. Task Difficulty vs. Student Performance
    - 2. Factors Affecting the Match:
      - a. Professional Bias
      - b. The Learning Environment
  - D. Curriculum Based Assessment
    - 1. Definition
    - 2. Assumptions
    - 3. Application: An Instructional Delivery Model
  - E. Implications for Teaching and Learning
    - 1. Effective Teaching Procedures
    - 2. Research on the Use of the Model
    - 3. A Basic Learning Principle (S^D-R)
    - 4. Competency Testing
- II. APPLICATION OF CURRICULUM BASED ASSESSMENT
  - A. Assumptions of Curriculum Based Assessment Applied to Reading
    - 1. Knowledge of Reading Scope and Sequence:
      - a. Basic Programs
      - b. Teacher Expectations
    - 2. Perceptual and Processing Tasks are not Prerequisites to Academic Tasks
    - 3. Assessment is to be Accurate, Continuous, and lead to Instructional Improvement:
      - a. Students' Strengths and Weaknesses
      - b. Testing Efficiency
    - 4. Assessment Activities Should be Directly Related to Teaching Activities:
      - a. Convertible Data
      - b. Comfortable Performance
      - c. Complementing Tasks
  - B. The Often Confusing Concept of "Level" of Performance
    - 1. Grade Level
    - 2. Functional Level
    - 3. Reading Level
    - 4. Instructional Level
  - C. Use of an Instructional Delivery Model for Reading
    - 1. Establishing Instructional Levels—Teacher Prepared Material
      - a. Assessment Input
      - b. Determining Ratios of Instruction
      - c. Preparing Content

d. Preparing Drill
e. Presenting Material to Student
2. Participant Worksheet 1

III. APPLICATION OF CURRICULUM BASED ASSESSMENT, CONT'D
A. Maintaining Instructional Levels—Teacher Transition Material
1. Assessment Input
2. Preparing Content
a. Internal Consistency
b. Misuses and Abuses
3. Preparing Drill
4. Presenting Material to Student
B. Participant Worksheet 2
C. Curriculum Based Assessment Generates Its Own Progress Measurement
1. Knowledge and Comprehension
2. Rate of Acquisiton
3. Rate of Fluency
D. Modification of Reading Related Assignments
1. Frustrational Tasks
2. Curriculum Adaptations

IV. CURRICULUM BASED ASSESSMENT APPLIED TO MATHEMATICS
A. Knowledge of Mathematics Scope and Sequence
1. Readiness Skills
2. Mathematics Facts and Associative Operations
3. Applications of Quantitative Concepts and Skills
B. Common Sources of Error
1. Using Wrong Operations
2. Using Incorrect Algorithms
3. Problems in Place Value
4. Random Responses and Assumptions
5. Self-Testing Activities
C. Basic Evaluation Techniques
1. Task Analysis
2. Product Analysis
a. Examination of Numerical Responses
b. Observing While Working
c. Working Aloud
d. Efficiency in Problem Solving

V. USE OF AN INSTRUCTIONAL DELIVERY MODEL FOR MATHEMATICS
A. Establishing Instructional Levels
1. Drill and Concluding Tasks
2. Task Item Selection
3. Mastering Facts
a. Assessment Input
b. Determining Ratios of Instruction
c. Preparing Concluding Tasks
d. Preparing Drill
e. Presenting Material to Student
4. Mastering Facts Through Complementing Operations
5. Participant Worksheet
6. Mastering Operations
a. Assessment Input
b. Preparing Material for Students
1.) Modeling
2.) Prompting
3.) Practicing
4.) Fading
c. Participant Worksheet
B. Progress Measurement
1. Rate of Acquisition
2. Rate of Fluency
3. Use in Applied Situations
C. Monitoring Progress

CBA LESSON PLAN

Materials

1. Worksheets and Instant Replays for each participant.
2. Transparencies and Grease Pencil(s).
3. Overhead Projector and Screen.

Sequence of Events

	Time Estimate (in minutes)
1. Welcome and Introduction	5-10
2. Presentation and Instant Replay Activities I: A Rationale for Curriculum Based Assessment Activity—The Learning Game	180
3. Presentation and Instant Replay Activities II: Application of Curriculum Based Assessment Reading—Part I	180
4. Presentation and Instant Replay Activities III: Application of Curriculum Based Assessment Reading—Part II	180
5. Presentation and Instant Replay Activities IV: Application of Curriculum Based Assessment Mathematics—Part I	180
6. Presentation and Instant Replay Activities V: Application of Curriculum Based Assessment Mathematics—Part II	180
7. Closing Discussion and Questions	15-30

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SCRIPT FOR CBA

PRESENTATION:
I. A RATIONALE FOR CURRICULUM BASED ASSESSMENT

The introductory section of this presentation can be adapted by each trainer to present his/her own experiences and examples. The introduction provided is one given by Edward E. Gickling, Ph.D., and John F. Havertape, Ed.D., primary content developers of this section. Generally, in the introduction, the trainer should personalize the presentation by addressing "Who am I" and "Why is curriculum based assessment important to me?"

My interest in this area started primarily with my background in educational psychology; and then developed later at the University of Tennessee, in Special Education, where this "Curriculum Based Assessment" concept began to evolve. Initially, I was trying to pull together learning theories and principles to make some sense out of them. But it was a professor of deaf education, with a strong background in language and language development, who got me involved in what I do now.

If I have any specialty, it is probably in helping people understand the importance of delivery—instructional delivery, not service delivery systems. A lot of people don't make that kind of distinction. They think if we make a service available—merely provide a teacher to kids—that teaching will automatically occur. I don't buy that. I think it works like that sometimes, but too often it just doesn't. I'm interested in improving the delivery process under instructional conditions.

The next section of this presentation begins with an overview of the workshop. Excellent references in preparing the trainer's overview in addition to the content material are Salvia & Ysseldyke (1977) and Wallace & Larsen (1976).

To give you an overview as to what we are going to try to do in this workshop, we will start with some discussion as to what Curriculum Based Assessment is all about. I will try to give you some indication of the dimensions of Curriculum Based Assessment and how the term itself is somewhat limiting. I want you to think of it as more than just an assessment device. Then we are going to cover two content areas, reading and mathematics. I am also going to touch on the relationship of language arts to reading, and try to show how these two areas need to be coordinated. Most of what we do will be illustrated using a series of examples, student work, and instant replay activities.

HAND OUT WORKSHOP MATERIALS

You will now receive a set of workshop materials, including some instructional worksheets, and instant replay activity sheets. Your packet of materials will for the most part correspond to the content of the overhead transparencies we will be using. It might be to your advantage to make notes on your worksheet outlines in case you want to make your own transparencies for any training sessions you might conduct later.

SHOW TRANSPARENCY 1

The target population that we will be discussing is one that we have labeled "Curriculum Casualty Group." When you look at the large amount of school work that kids are given, the number of informational facts presented, and the numbers of assignments, it is astounding. Even so, the majority of children are generally able to deal with their curriculum and the decisions their teachers make for them to learn that curriculum.

But there is an identifiable group of students who do poorly. I would estimate the number of assignments that kids have over a school year to be a minimum of 750. When you look at that total volume, you can estimate how a child performing poorly might feel with respect to each of those assignments. That child could easily become a "Curriculum Casualty." In other words, the curriculum has produced the problem.

When discussing student casualties, one naturally thinks of handicapped populations. With the current emphasis on mainstreaming and the attention being given to training regular teachers to work with handicapped children in regular classroom environments, it is difficult to think otherwise. But handicapped children only represent a portion of those students who are experiencing curriculum difficulties. A far larger number are exhibiting marginal performance within regular classrooms, most often without the benefit of any special assistance.

According to the former deputy commissioner of the Bureau of Education for the Handicapped, Edwin Martin, (1974), there is growing evidence that as many as 25 to 40 percent of all children will display sufficient variations in learning or behavior styles to warrant specially designed educational programs for at least short intervals during the school year. Even though these figures may appear to be high, research indicates that educators expect a third of their children in regular grades to obtain below average scores on standardized achievement measures (Helmstadter, 1964; Stevens, 1971). These are the children who are usually swept aside by the indiscriminate and insensitive use of materials and programs based on normative instructional standards.

Let me introduce you to Rick. Rick is a third grade boy who, according to his teacher, is not performing at grade level in spelling and reading. He is beginning to have temper outbursts in class, refuses to complete tasks and wanders about the room.

SHOW TRANSPARENCY 1a

Rick has normal vision and hearing, and he shows average performance on an individually administered test of intellectual functioning.

SHOW TRANSPARENCY 1b

He performed well below average on the Wide Range Achievement Test (WRAT), with a standard score of 69 in reading and 83 in spelling. When we look at an estimate of his intellectual functioning, a verbal IQ score of 102, and compare his reading and spelling standard scores, our first hypothesis is that Rick should be doing better in those academic areas. Even if we carefully examine Rick's WRAT protocol we may not be able to discover what skills Rick has and what specific recommendations we can offer to his teacher for using the available curricula.

While you may want to speculate about reasons why Rick's performance is discrepant, let's look at his actual reading behavior in the curriculum to which he is assigned. We will focus on what words Rick reads without hesitation, what words he reads but calls hesitantly (i.e., with some delay) and what words he does not know. Rick's current assignment is a low vocabulary, high interest series that the teacher has just selected for a group of students in her class who are not doing well. The series' first story is "The Red Truck".

SHOW TRANSPARENCY 1c

Notice which words are known and which are hesitants and unknowns. Unknown and hesitant words represent "challenges" for Rick. As we look at his performance we should ask ourselves: "Is this selection too hard, just right, or too easy to use in improving Rick's performance? How do we adjust the instruction that Rick receives to help his performance?"

The answers we give ourselves will say a great deal not only about Rick but also about how we approach assessment in general. Keep Rick and the questions you might have about his performance, the teacher's instructional style, and curricular material, and so on in mind as we explore curriculum based assessment.

We have briefly addressed the idea of curriculum casualties, and we have used the case of Rick to illustrate the idea initially. Now let's take a look at assessment as it is used to identify students with special learning curriculum needs.

SHOW TRANSPARENCY 2

What is assessment? Basically it is a process which should yield sufficient information to render educational judgment on behalf of a child. Such judgments are usually made in four distinct stages: screening, identification, instruction, and the measurement of progress.

Screening is basically a process leading to early recognition of problems, and it is usually the step following a referral. The identification stage is a verification or discounting of the problem. The problem is either of sufficient magnitude to warrant special service, or it is not. It is here that we get into all of the problems of labeling, but for the purposes of this module, the label is irrelevant, therefore there is no need to discuss it further.

The identification phase is basically a discriminative process, wherein normative comparisons play an essential role. Just how different the student must be in order to justify some kind of special service is usually the question to be answered at this stage. That question is going to be with us regardless of the kind of instruments we use, but it is usually easier to justify the use of standardized testing at this stage since the discrimination necessary will always require some form of comparison with peers, expected skill level, or normal development to demonstrate the extent of the problem.

The third stage is instruction. This is where help can be provided, and it is at this stage that we are going to concentrate our attention in this part of the workshop. Screening and identification may help make available special programs and personnel for the school system and for the child, but these alone will not assure the student instructional success. Assessment at this level must be concerned with the student's daily assignments. That is what curriculum based assessment is all about. It takes into account the daily arrangement and presentation of assignments, as well as the student's performance. Obviously that requires assessment on two dimensions.

Curriculum based assessment is not only about the child and his/her skills but it is also an analysis of the materials that will be used by the child.

The last stage in the sequence of four is the measurement of progress. That is almost self-evident, but it is often overlooked.

This concept of stages in assessment follows a logical sequence. Because the stages are interrelated, it is easy to assume that input into one phase will automatically contribute to the next. Indeed, this seems to be true with respect to screening and identification. The assumption becomes much more tenuous, however, between the identification stage and the instructional stage. The fact that time is being devoted to train people in the use of Non-Test Based Assessment is evidence of this point. Information obtained and used during the identification stage is generally not transferable in a functional way to teachers who control a child's instruction. So even though there are links among these four stages, that linkage is very tenuous between identification and instruction.

CONDUCT INSTANT REPLAY
THEN
SHOW TRANSPARENCY 3

What we are really talking about, then, is the concept of instructional match. That is, the match between the child's ability and the task demand. When we say that the match is right, what we are saying is that there is an optimum level of learning occurring. In other words, the child is getting the maximum from the task, and the learning experience is engaging the teacher in providing new information.

When these two things occur, we have what reading teachers have, for a long time, called "the Instructional Level". When the task demand is not challenging and the student is able to do the task without any effort, we refer to that as an independent level of performance. The problem we face with curriculum casualties is that they seldom reach this level. Instead, they generally flounder around at or near the frustration level. They are not getting much from the task, and they are expending an exorbitant amount of energy for few results. So the instructional match is really a mismatch. We want to control this match the best we can. The purpose of this workshop is to train you with procedures that will enable you to control the instructional match.

SHOW TRANSPARENCY 3a

There are factors that we have to consider when we attempt to control the match. One is our professional biases. All of us have professional biases. All of us have been trained in particular schools of thinking. All professional personnel working with kids who need help attempt to pinpoint areas of disability in the students they work with. What we identify as the disability depends on our former professional training, and how personality is interacting with that training.

In essence, one looks for, finds, and treats what one expects and believes exists. So you have to look into your background of theory and experience to see what your biases are.

Are you a "readiness" kind of person, a "basic skills" kind of person, a "whole content" kind of person, or a "language experience" person? What are your orientations? What are your biases?

Other factors that affect professional bias are external forces that impinge upon the teacher. Those of you who are psychologists are part of that external force network. When making recommendations to teachers about curriculum you are providing indirect services. Unfortunately, whether you like it or not, unless you have good rapport with people, you aren't routinely accepted by the teachers when you come in to provide this kind of consulting help. Under such conditions, the concept of an instructional match will generally be approached with a great deal of uncertainty by the teacher. You may make suggestions, but if the person you are making a recommendation to is not quite in agreement with you, then the chance of that match or recommendation being fulfilled is tenuous. So we always have to keep in mind the point of view of the direct service person.

The kind of service delivery system we use may also be a source of professional bias. Most educators in special education are now in resource positions. As resource persons, they should be serving the regular classroom teachers. That means, if we are doing our job, we must become familiar with the instructional materials that our teachers are using.

The concept of curriculum based assessment which is developed in this workshop necessitates the examination and use of regular classroom materials and a close cooperation with regular classroom teachers. We examine classroom curricula and talk with teachers to facilitate making our decisions and recommendations. Their biases also will influence the directions we can go.

SHOW TRANSPARENCY 3B

Another area that we need to consider is the learning environment. We will consider this point only briefly. The learning environment includes such factors as:

1. The selection of materials
2. The way the systems are organized
3. The sequencing of concept in the curriculum
4. The modes of presentation applied.

It also has to do with situational variables:

1. How we use groups
2. How we involve peer teaching
3. How we allow for volunteers
4. The structure of the school day.

Another important element in the learning environment is the student's ability to read the teacher. The ability to accurately recognize and follow-through on both the teacher's verbal and non-verbal communication will, in large measure, determine the success the student is having in the classroom. If the student isn't picking up on the teacher's cues, then he/she is going to have difficulty in the classroom.

SHOW TRANSPARENCY 3c

A third factor affecting the instructional match involves *levels of performance*. For the purposes of our discussion, the level of performance has more to do with where the student is performing than some defined need.

SHOW TRANSPARENCY 3d

First we have grade level. Grade level is often applied to chronological age. For example, a student is ten years old: s/he is probably in the fifth grade, right? But grade level can also apply to where the child is performing. For example, a fifth grader might be performing at a third grade level. It can be used both ways.

If we say that a child is a fifth grader and is functioning at the third grade level, how is that determined? It is based on some kind of comparison, some kind of testing system. It may be formal analysis with standardized instruments which provide grade level equivalent scores, or it may be some kind of informal measure.

We use the concept of grade level to provide us with a little more precision in looking at the performance of a child. If we use the concept of "reading level" it provides even more specificity for looking at a child's actual performance.

The problem with using a numerical *reading level* though, is that it is still a normative comparison. More useful information is provided by estimating a level of reading performance which is instructionally comfortable for the individual student. We further specify reading level to include the instructional level, the frustration level, the independent level, and the potential level. But even using these terms may not give us much more precision. After we determine the level, we are still compelled to make some kind of match between the material and the level on which we say the child is functioning. We then hope that the child will be able to read a little bit better. This concept seems sound enough, but what actually happens within the diagnostic-prescriptive process is that we usually collapse several student abilities into a single score. We call this single score a "reading level". Level is then interpreted quite literally to mean the student's actual reading ability score, but it cannot possibly reflect the range of abilities that the student has.

What educators often forget is that a score is merely an estimate: it is only a sampling of a student's performance. From our observations we suspect that when independent, instructional, and frustrational levels have been determined, they receive very little attention after the student is assigned a reading book. It is as if the book will now take care of any discrepancies in the student's skills. At leest, if not this book, then another book!

Well, that is *not* going to provide the kind of resolution that you want, and there are lots of reasons for that. The kind of precision that is needed is probably not going to be provided by the concept of reading levels, especially when the scores are at grade 2.5 or below, because the match then becomes much more tentative. Above that level, the estimating error of the test is reduced to some extent by the greater ability of the child, and then the match is likely to be more appropriate. Any time you get a score in reading of grade 2.5 or below, you have to be very careful with your interpretations.

There are problems with standardized achievement tests which also contribute to the lack of precision in the concept of reading level. It is common knowledge, for example, that reading achievement test scores are usually inflated. In other words, if you get a reading score of 2.1 on the *Wide Range Achievement Test* (WRAT), that means the child is probably reading at a pre-primer level on classroom tasks. The score is inflated. In contrast, the reading level of basal reading materials is often underestimated by publishers. When you see a publisher's recommendation that a book is a second grade reader, and you apply some readability formula, you will usually find that the book is harder than the publisher says it is. Now, if you assign a child with an inflated performance score to material that has an underestimated difficulty level, how good is the instructional match? Do you see why this method is so tenuous when the reading grade level is specified as a score of 2.5 or below? There is also evidence to indicate that scores from standardized achievement tests may not be all that representative of what we are trying to teach in reading anyway.

Other terms we often use synonymously with grade level and reading level are *performance level* and *functional level*.

But, anytime we use these concepts, we are still relying upon standardized tests.

You have probably heard it said that "Tests themselves are not good or bad; it's how you use them that's important." We are not saying that you shouldn't use tests. We encourage their use, but only where appropriate. They are particularly valuable in measuring progress; but they are not very useful in making instructional decisions. To make instructional decisions, we need something we can "hang our hat on" instructionally. Every day when the teacher goes in to face a child, she/he should be doing something that can be evaluated.

That brings us then to the only really meaningful unit that we have to work with in the classroom on a daily basis. It is *not* the concept of grade level, reading level, or functional level, but it is the *instructional level*. Determining the instructional level requires you to look at the performance capability of the child on every assignment she/he receives.

SHOW TRANSPARENCY 4

Now let's take a look at the definition of curriculum based assessment. It sounds self-evident doesn't it? But don't make the mistake of interpreting curriculum here as it is typically applied in the assessment process. Instead, we see curriculum based assessment as a process of data collection, interpretation, and application. These three processes are interwoven in curriculum based assessment, with the result being an emphasis on instruction. So, what we are talking about is not just a process for collecting information but a device which also allows us to make instructional decisions.

Let me define this procedure for you, and see how your definitions compare with mine.

The focus is on the core curriculum content that is being used in the school to teach students. It is this core content which becomes the medium that is used as the assessment device. If the medium that your school (or your teachers) have chosen for teaching is workable, then it can also be a very useful assessment tool. Curriculum based assessment includes direct observation of the learning environment, analysis of the processes the child uses in approaching tasks, and a controlled arrangement of the tasks.

Are there any questions about the definition of curriculum based assessment?

Now let's go over some basic assumptions relevant to understanding the concept of curriculum based assessment. Then we will be ready to start learning to apply a model of instructional delivery.

DO INSTANT REPLAY
THEN
SHOW TRANSPARENCY 5
COVER EACH POINT

The model that we have been talking about is based on certain assumptions. Let's run through these very quickly. First, you have to have an understanding of the kind of curriculum scope and sequence that you are working with. As you know, scope and sequence vary from one program or one publisher to another. But there may be common elements between programs, regardless of the particular scope and sequence. For example, most reading programs include readiness skills, word recognition skills, passive reading, reading comprehension, reading for fluency, and study skills in the content area.

It is perhaps easier to designate a specific learning sequence within each of these skill areas than across the skill areas. But reading teachers who are able to get the greatest gains from their students generally try to teach across such series of skills, as opposed to teaching within just one skill area. You should incorporate all of them at one time if you can find a way to do this that works for you.

Another very important assumption that we make is that perceptual and processing tasks are not prerequisites to reading. Perceptual processing appears to have more to do with reading readiness than with reading itself. Basic perceptual skills are very important. But a question often raised is this: "Does training in basic perceptual skills facilitate later reading ability?" Most of the literature that we have reviewed indicates that this is a moot question, and we feel that there ought to be a moratorium on the process approach for the time being while we focus on the specific skills used in reading.

Yet another assumption that we make is that curriculum material can be an asset or a deterrent to reading. People generally think that the materials, by themselves, are neutral. We believe that they are not at all neutral. If they are anything, they are normative in the same sense that tests are normative. Once they are printed, they don't change. As a variety of children with different skills are exposed to the same material variation will occur. So, you've got to learn how to modify and manipulate the material itself if you are going to make it work for the child.

A fourth assumption is that assessment must be accurate and continuous and lead to instructional improvement. By "accurate" we mean that it has to be sufficient to get the job done and reflect the student's current situation as exactly as possible.

When you are assessing to make decisions about instruction, it is quite different from assessing for placement or for identification. You don't have to worry about such things as the error of measurement when you assess for instruction; in fact, the on-going instructional process allows you to account for errors and to overcome and plan for errors as they occur in the child's course of study.

There is often an inverse relationship between time spent in assessment and time spent in instruction. It is paradoxical that children who perform well are subjected to very little assessment, leaving more time for instruction. But poor performers, who need more instruction, often lose much of this time to the onslaught of assessment, while the evaluators are trying to identify the problem. For those who still advocate this approach, we add the caution that even the best use of methods and materials may not offset the learning loss produced by excessive time spent in evaluation. When instruction is our goal we want to get on with the instructional program. We don't need all that much data, only enough to get started and to make decisions.

Here is a general rule to follow: When you are working with a child who has considerable skills, focus on what s/he doesn't know; but when a student is skill-deficient look for what s/he knows. You will save yourself a lot of time. Let me give you an example.

The following example is one provided by Dr. Edward E. Gickling, from his experience

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A student teacher once came to see me about a girl she was trying to teach. The teacher said, "I don't know what to do with this girl. I have been working with her for six weeks. She is 14-years old, and I can't get her to learn anything."

"Well, what does she know," I asked.

"She doesn't know anything," the student teacher replied.

"What does she know in math?"

"Nothing."

"What does she know in reading?"

"I told you, nothing."

Then the teacher stopped and asked, "What do you mean, what does she know?"

I replied, "Does she know any letters? Does she know any words? Does she have any phonetic skills? Go back and find out exactly what she knows."

The teacher came back the next day and said, "Here it is. The girl is in the seventh grade. She knows five words and seven letters of the alphabet, and that is all." Then we had something that we could build on. What kind of standardized testing procedure would pick up that kind of data? From that information, we were able to teach the girl two new words the next day. She learned to write two new sentences, and she had her first successful reading experience in seven years of school.

When very little is known, find what is known. You will save yourself a lot of time.

Again, curriculum based assessment is a procedure for determining the instructional needs of a student based on the student's ongoing performance within existing course content.

It includes the use of:

1. Direct observation of the learning environment,
2. An analysis of the processes used by the student in approaching tasks,
3. An examination of the tasks completed, and
4. The control and arrangement of tasks for the student.

These aspects will become clearer as we move along.

The burden of responsibility in the teaching learning situation must be changed from requiring every child to meet pre-established learning conditions to changing conditions to meet the individual needs of the child. (Orlando & Lynch, 1974)

In the words of Thomas Gordon (1974), "Teachers are seldom helped by merely being told that they will be more effective if they would only improve their relationship with the young people they teach. This is far too abstract. They want to know how to do it." (p. 25) That statement could also be applied to the concept of individualizing instruction. Its interpretation is usually far too abstract and its application too vague for instruction to be consistent and effective across teaching personnel.

The curriculum based assessment model provides a structure for controlling the differences between what the teacher is trying to teach and what the student is able to learn.

Now, lets look at the essentials of instructional tasks as they are shown on the transparency.

SHOW TRANSPARENCY 6

When it comes to reading instruction, there are basically only two types of tasks. There are tasks which require reading and there are tasks which do not, but require other kinds of activity.

Reading is defined in this model as "rapid and sequential sight word recognition with accompanying comprehension." Everything else that is done which doesn't allow for rapid, sequential sight word flow is not reading. It may be an aspect of reading, it may be drill related to reading, but it is not the act of reading itself.

Drill—there may be a better word for it, but it is a term in common use. Drill related activities make up most of the teacher's instructional day. More time is spent in drill than in any other kind of activity. Students' performance must be at a higher level in reading than in drill to be successful.

The second component is the task item. Within each task type you will find that there are known items, hesitant items, and unknown items (from the perspective of the student).

These first two components of tasks are basically decided by the teacher. The third component, however, has to do with student performance. How well the student functions on the task and the task items will determine his/her level of performance on the task.

Both hesitant and unknown responses are represented in the delivery model as areas of challenge, whereas high emissions indicate the area of known responses. For reading, an instructional level represents between 93-97 percent known items following a 3-7 percent margin of challenge. Comprehension should be approximately 75 percent or higher at the instructional level. For drill, the margins of challenge are increased; an instructional level for drill is 70-85 percent known items leaving 15-30 percent of the items as challenge.

These ranges allow flexibility in making instructional choices of reading and drill activities and provide a manageable set of criteria to evaluate the daily suitability of students' instructional assignments.

The concepts of instructional, independent, and frustrational levels are most commonly applied to reading. The terms were first introduced by Betts (1952) and were based on his observations of students' reading behaviors. He indicated that an independent reading level is represented by 98 percent accuracy and at least 90 percent comprehension; an instructional reading level by 95 percent accuracy and 75 percent comprehension; whereas 90 percent or less accuracy and 50 percent or less comprehension is considered a frustrational level. He concluded that students profit most from reading materials at their instructional level, and least from materials at a frustrational level.

Some performance at an independent level is also desirable, but at this level neither the material nor the assistance of the teacher are used to full advantage. Since the conception of these levels, the basic goal of reading has been to select materials which will not frustrate students, but will produce instructional and independent performance.

DO INSTANT REPLAY
THEN SHOW TRANSPARENCY 7

There are some basic rules to remember in using this model. The first rule is to keep the percentage of "knowns" high—that is critical. It provides motivation and lets students know they're doing okay. The "sandwich" technique is useful—two or three knowns, and then an unknown. Drill on an unknown; then provide knowns; and then go back to the unknown. Keep your percentage of knowns high. It also does marvelous things for the attention span of the student.

A second rule is to confine new material to the child's margins of challenge. Items of undetermined status should be treated as unknown. Suppose you find a new word and you don't know whether the child can handle it or not. Use the word as an unknown in the margin of challenge. What often happens in a typical reading program is this: We give a child a book and say, "Read paragraph so and so," and then we ask the student to read another paragraph and another. There can be a substantial number of unknowns in such an experience, and the reading of several simple paragraphs can frustrate the student significantly.

Did you know, for example, that variation in difficulty of first grade reading texts ranges from four months to two years? For the intermediate years, the range is as much as one to four years. Now, if you are talking about a large variation of difficulty, sentence length and vocabulary words, that is an awful lot to throw at a child who has marginal performance to begin with.

The third rule states that items of undetermined status are treated as unknown. This requires that you look ahead at the material before you assign it, and anticipate what these items will be.

Rule four: Prepare the content before the drill. Now this is just common sense. If you know your kids, even before you read the content you can anticipate where a given student's errors are likely to occur. And knowing this, you know what to emphasize in your drill. The drill will complement what the student is going to read later. A reading drill often is done independent of the content. Most workbooks, for example, are independent of content.

The fifth rule states that although you prepare content before drill, you always reverse that order in the assignment. Present the drill to the student before content.

Finally, the sixth rule requires that all tasks be carried to their logical conclusion. That is, for a task to be meaningful to a student, it has to be explained explicitly in terms of the content being presented for learning.

The following example is shared with us by Ed Gickling, one of the major developers of this training package: "I visited a class once, and I sat and watched a boy cutting and pasting D's for about 20 minutes. There were cardboard D's, blue D's, sandpaper D's, beautiful D's, capital D's, and lower case D's. Then the bell rang, and he left the room. I walked up to his teacher and said, 'Hey, Mary Kay, what's a "D"?' She couldn't answer me. In fact, she was dumbfounded that I would ask her such an involved question. I put it to you—what is a "D"? It is a full name for a graphic. . . . it is a letter of the alphabet. . . . it is a duck? What is the logical conclusion of the task that Mary Kay had the student doing? "A 'D' is part of a word, you say okay. If it is only part, is making "D's" a conclusion to a task? Of course not. There was no meaning derived from the experience.

A logical conclusion is the end point at which meaning is attached to the experience. The experience of working with "D's" could have been related to recognizing words that utilize the letter "D" in them. We see it done on television programs like "Sesame Street" all the time. If this had been done in the example just cited, then the student could at least have left the room with something meaningful. Carry everything to its logical conclusion. The essence of reading is to gain understanding and meaning. That is what we must help students accomplish and what we must look for in determining whether or not a student can read.

DO INSTANT REPLAY

What about the research regarding this particular model? Are we presenting this to you just because we think that it makes sense? Things do have to make sense for teachers to use them in the first place, but they also have to show some results. Let me share with you some findings that have come from research on this model.

SHOW TRANSPARENCY 8

Note: These are two studies conducted and presented by Ed Gickling which can be adapted for presentation by each trainer.

In this study, we observed four children who had been classified as learning disabled. They were in the 7 to 10 year-old range and were being served in a diagnostic center.

The term "diagnostic prescriptive approach" is used here to describe the routine procedures that the teacher had been using. She did the usual kind of testing with achievement tests and tried to determine the student's level of functioning. She then matched assignments to this level. As you can see *(point to the transparency)* the diagnostic prescriptive approach was used twice: Once at the beginning and again at the end.

The "token economy" condition was like the diagnostic prescriptive approach except that external reinforcements were administered for on-task and task completion behavior.

In the "controlled curriculum" condition the principles of curriculum based assessment—the ones we are presenting in this workshop—were applied.

Finally, in the "combined curriculum" condition external reinforcement was added to the controlled curriculum.

During the study students were rotated across treatment conditions, so that no more than two kids would be in the same treatment condition at any one time.

Across conditions there are two things that you should look at. One is the relative percent of task completions and on-task behaviors; the other is the fluctuation that you see occurring from day to day. Often we are happy with the relative overall percentage count, without looking at variations in performance from day to day.

For example, look at the behavior at the beginning here *(Point to diagnostic/prescriptive 1 on Transparency 8)*. The behavior is pretty good for the first few days. Now notice the relationship between task completion and on-task behavior. They move together, don't they? One appears to affect the other. The child's task tends to be relatively easy at first; the teacher makes an adjustment, and the behavior starts to fall off until we are only getting about 65% on-task behavior and a task completion rate of about 45%. What happend was that the teacher, seeing that the tasks were too easy, made an adjustment, and overadjusted making them too difficult.

Employing token economy systems, under these kinds of conditions, won't take out this type of fluctuation. It merely encourages on-task activity, which although desirable is secondary to learning. It does not control the curriculum. If a child is struggling with tasks, external reinforcement isn't going to help him learn; instead it will help him struggle longer.

For the third condition shown on the transparency, in which we were able to control the task, we really did not have to worry about what else was going on. In the fourth condition, when reinforcement was added to the control of the task, nothing was gained over the third condition.

Obviously, with such a small sample of subjects, it would not be wise to generalize too much from these data, but they give you an idea of what is theoretically possible.

ANSWER ANY QUESTIONS
SHOW TRANSPARENCY 9 FOR 2ND STUDY

From another study, with a different group of students, we can see what happens when difficulty of instructional material is controlled. This study took place in a Title I Reading Program. Four first graders and four second graders were selected from two classes. These eight students were selected because they were frustrated and appeared to have very little idea of what was going on in reading class. A look at the baseline level *(point to the first column on the transparency)* here in the first column shows this very well.

Now, if you had just looked at task completions, you would have gotten a mistaken impression about performance, because their task completions averaged more than 60%. But completion of tasks isn't a good gauge of understanding. When we look also at on-task behavior, we see that these students weren't putting out very much effort. When the students were asked questions like, "What is this word?" "What does this mean?" "What was that letter?", the comprehension rate was low, as you can see.

Now let's look at the ways that each of these three elements are measured:

To measure task completion, we wait until the students have turned in their work to the teacher. We check to see if each task was attempted—not whether or not it is correct. If there was an attempt at the task, it is called a completion. Whether it is right or wrong will come into play later when we measure comprehension.

We take the student's work back to him/her immediately and ask the following types of questions:

"What is this word?"
"What is this letter?"
"What is this sentence?"
"What does this mean?"

What we are trying to ascertain is whether or not the student understands the task.

To get a measure of reading comprehension, we generally ask four or five questions. To assess understanding of certain other tasks we ask about ten or twelve questions. For example, if the task is letter recognition, we would ask a minimum of 10 questions: "What letter?", "What letter?", "What letter?", etc. and we would figure percentages from that. We would need more than four or five responses to get an accurate percentage. But if the task for the child was to read a selection, then we would ask four or five comprehension questions and figure percentages from that.

Now take a look at the second column. For this phase students were taken out of the regular classroom into an adjacent room where they worked using the same textbooks that they had been working in with their teachers. In this instance, all of the assignments were controlled to around a 50% level of difficulty. The material was prepared before the student got there, presented to him, and then observations were made by asking comprehension questions. At the frustration level we merely confirmed what was already seen in the regular classroom.

The next week the same students were given assignments at the instructional level. The range of knowns was 93 to 97% in reading and 70 to 85% in drill. The tasks were controlled within those levels. The effect was immediate and clearly demonstrated in column three of the transparency. Remember that the materials were prepared before the instructional session based on the assessment of knowns. The materials were now manipulating the performance of the students.

In the third week, the material was made even less difficult by establishing the assignments at the independent level. You can see that comprehension and task completion were near 100%, but what happened? The ease of the material allowed an excess amount of free time which the students could have spent more carefully.

ANSWER QUESTIONS

So far we have looked at some basic rules for curriculum based assessment and we have briefly reviewed two studies.

Now we are going to take a look at a basic learning principle. When we finish with that, we will end this part of the workshop with an activity called "A Discrimination Learning Game". The next parts of the workshop will then deal with an applied curriculum based assessment model for reading and mathematics.

SHOW TRANSPARENCY 10

Let's take a look at a basic learning principle—S^D-R, where a stimulus is presented which will allow the kind of associations that will produce the correct response. For the purposes of our discussion here, the most important thing is not the response. We must get the right response, of course, but the important thing is the "D"; the number of discriminative stimuli that we introduce will proportionately increase the amount of interference that the child will have in acquiring associations. Now let me say it another way.

The number of discriminative stimuli that you introduce, will proportionately increase the amount of interference that the child has to overcome in acquiring the associations that you want him to learn. If you have ten spelling words that are all unknown, you have ten discriminative stimuli. What makes the child discriminate one unknown from another unknown when there are ten unknowns to contend with? It is just that that makes the learning of the spelling words difficult.

DO ACTIVITY 1
A DISCRIMINATION LEARNING GAME

ACTIVITY 1

A DISCRIMINATION LEARNING GAME FOR DISCRIMINATING LEARNERS

Purpose: To introduce a curriculum based assessment learning model illustrating instructional versus frustrational learning levels.

Time: 30 minutes: Introduction .... 5 minutes
Activity............ 15 minutes
Analysis .... 10 minutes

Group Size: Need at least ten people who can perform before the larger group. Also, all participants in the workshop can try the activity using pencil and paper.

Group Structure: Ten people need to be selected to serve as "learners" in the activity. The remainder of the group will serve as observers with instructions provided by the trainer.

Physical Setting: Because responses from the "learners" must be heard by the other participants, they need to be instructed to address their answers to the participants audibly. The room in which the workshop is being conducted is usually sufficient.

Materials:
1. Chalkboard and chalk
2. Pencil and paper for audience
3. Blank transparency to record or illustrate activity results.

Overview: Participants will be asked to record their answers on paper as the ten selected members give their answers orally. This activity involves a two part learning game: in the first part all *new* learning material is introduced initially to create a high frustrational level for learning. Then the second part will involve gradual introduction of unknown material into words already introduced and mastered. Participants and "learners" will then be asked to contrast their levels of frustration from the first part to the second.

Process:

1. Select ten participants to serve as simulated learners and "discriminative stimuli". The trainer may ask for volunteers or simply request the assistance of selected participants. Emphasize that the only requirement is to say a word or discriminative stimulus in front of the larger group.
2. Meet with the ten participants to discuss their roles. This is a good time to offer the group at large a ten minute break. Tell the ten selected participants:

"I want each of you to take a word as your new name. I will ask you to introduce yourself to the group. Select a word that is *not* a proper noun or name. These words can be adjectives, nouns, verbs. Examples of names you can take are: "About", "Saw", "Was", "The", "That", "There", "And", "Look", "Go", "When", "IT", etc."

Then tell them not to tell their word to anyone until you (the instructor) tell them to say the word after the activity starts. (See "Cautions and Pitfalls" at the end of this activity before continuing.)

3. Explain to the workshop audience:

"Now we're going to try a little learning game. Each of these ten people represents a new word that I am introducing to you for the first time. I want you to listen to all ten words first and then write down as many as you can remember. Don't write down the words as we go along. Wait until every person has given you the word he/she represents. Now (point to the first person of the ten, asking him/her to tell the group his/her word name) Who are you?" (go quickly through all ten people having each give his/her word name)

"Now tell the audience: "Now take 30 seconds to write down as many of the names as you can remember."

You can also instruct each of the ten selected people to write down as many of the words as they can remember as well.

Part 2: Say to the audience:

"Now, we are going to try it a little bit differently. What we have done so far is to introduce you to nothing but discriminations. They were all new. As you are trying to recall one, the next one is being introduced, and the next one, etc. The amount of interference that occurred was obvious to each of you I am sure. This interference overloaded the association.

"Now, let's try to change that a little bit" (ask participants to give the names of one or two of the participants, and you then refer back to those named several times before introducing another. Now the game continues.)

You (the leader) ask the first 2 of the ten what their names are, and then you introduce them to each other. It might go like this: To the first one you would ask, "Who are you?" The answer might be "Own". Then, to the second person you would ask the same question, "Who are you?" The answer might be "The". Then you introduce them to each other, perhaps like this: "Own, this is The." Then you drill these two by asking, "Own, who is this?" (pointing to "The"; "And The, who is this?" (pointing to "Own"). After each such question you wait for the person to reply.

Now address the third person in the group of 10: "Who are you?" "Go" that person might respond. You then ask each of the three to name the other two participants.

And now you address the fourth person in the same manner, and then ask each of the four to name the other three participants.

You keep adding only one new name each time before initiating drill thus maintaining the instructional model's ratio of known/unknown words when instructing students.

You can continue to add one new person until all ten have been introduced and finally one participant can successfully name all ten "new" persons (words). Or, you can quit half way through the names, make the point about this method being easier because of the ratio of knowns to unknowns and ask the ten participants to return to their seats.

The decision to stop half way through is made on the basis (1) the workshop group's interest in continuing, and (2) whether they appear to understand the instructional model's ratio of knowns to unknowns when instructing students.

Analysis: (The following is suggested script for a discussion of the analysis of this activity):

"Let's talk a moment about acquisition rate. This activity illustrates control of the pattern of introduction. We are trying to keep the number of knowns high and then only introduce one or two new challenges at a time.

"If we gradually introduce words, the acquisition rate is higher. For example, how many of you now know who "Own" is? "The?" etc. You don't have to concentrate on those people anymore. You are listening for the new word, the new experience. That is what we are trying to do, to control the amount of discrimination that is introduced, and that amount will depend a lot on the student's capability."

One more thing, this model deals with competency testing. These activities are basically competency testing activities to illustrate application of the model.

Cautions and Pitfalls: Any opportunity to perform before a group can bring out the comedian in some of us. Emphasize that the words selected by the ten participants should simulate a classroom drill session. Ribald words or words with puns attached to them may add some amusing entertainment, but may also distract from the meaning and focus of the activity. If you want to control for this, *preselect* some words and print them on slips of paper or index cards, and then have the selected performers choose a word from the cards. Just be sure they give *no* visual cues to the audience or to each other. The words are to be spoken, not shown visually.

Also, if the cutting up gets in the way of the activity and appropriate discussion, you may need to intervene. Try to minimize any competitive efforts of individuals to outperform others. Otherwise the meaning and intended focus of the activity may again be overshadowed.

PRESENTATION: APPLICATION OF CURRICULUM BASED-ASSESSMENT READING PART I

SHOW TRANSPARENCY 11

We are going to move quickly through the presentation part of this section so we can get into some of the actual opportunities for you to manipulate the materials we have. We will start with some assumptions applied to reading.

SHOW TRANSPARENCY 12

It is assumed that evaluators who collect data and plan instruction are well versed in the scope and sequence of reading instruction in general and how it applies to the child's individual needs in particular. They must know what skills or sets of skills are being taught, the order in which they are presented and the types of adaptations which are feasible within the reading content of the child's classroom. Such knowledge is essential for the purposes of determining which specific skills have and have not been mastered.

We should mention, though, that educators are not in total agreement as to what the scope and sequence of reading should be, or for that matter, exactly what the essential subskills are for reading. This may be why there are so many variations and approaches to reading. With these limitations in mind, we would nevertheless like to present a simplified version of a reading scope and sequence. Doing this will help us keep things in perspective as we discuss and demonstrate certain aspects of reading assessment and planning.

Outline the following material on the blackboard, or on a transparency with grease pencil as you present each item.

SAMPLE SCOPE AND SEQUENCE

1. Readiness skills for reading
    - A. Attending behavior
    - B. Auditory discrimination
    - C. Visual discrimination
    - D. Letter recognition and differentiation
    - E. Experiences with language
2. Word recognition skills
    - A. Whole word
    - B. Phonic analysis
        - 1) grapheme-phoneme associations
            - a) consonants
            - b) vowels
            - c) blends
            - d) digraphs
        - 2) Sound blending
    - C. Structural analysis
        - 1) prefixes
        - 2) suffixes
        - 3) root words
        - 4) familiar elements
        - 5) syllabication
    - D. Content clues
    - E. Dictionaries and resources
3. Passage reading (rapid sequential word recognition)
4. Reading comprehension
    - A. Vocabulary knowledge
    - B. Literal meaning
    - C. Imagery
    - D. Use of context to monitor accuracy
    - E. Main ideas
    - F. Inference
    - G. Critical reading
5. Fluency of reading
6. Reading and study skills in content areas

The term "scope and sequence" implies that there is a logical order in which skills are to be presented and developed. In reading, however, it is probably beneficial to think of such items more as a list of skills to be developed than as a particular order to follow. If a hierarchy for presentation does exist, it is within the major skill divisions rather than across divisions. In reading, teachers naturally cut across division lines as they work simultaneously on a variety of skills. To do otherwise would tend to fragment the reading process and delay students from becoming functional readers.

An evaluator must be aware that an exact scope and sequence is contingent on the structure and type of the reading program and curriculum used within the particular classroom. The skills and their sequence of development will be different depending upon whether a phonics, linguistic, or content approach is being taught. There will also be variations in scope and sequence in different publishers' versions of these three general approaches to reading.

In addition to differences in programs, teachers' expectations also influence the scope and sequence of reading in at least two ways. In one situation, if the teacher is to provide resource or supplemental services, then these services should emphasize the acquisition of those skills the child needs in order to meet the demands of his regular classroom teacher. So as not to confuse the child or create program dissonance, the resource person should use those methods and teach those reading skills which support his other instruction. This, of course, may limit the options and instructional choices available to the resource person to a predetermined scope and teaching sequence.

The talents, curricular emphasis, and special interests of the teacher will also dictate which aspects of the reading scope and sequence are to receive the greatest weight. For example, the teacher who focuses almost exclusively on word attack and drill related tasks will be more likely to slight the content and comprehension aspects of reading, which in a scope and sequence are equally important. A teacher who is closed to all except one method of teaching word attack, for example, would not provide suitable instruction for a child who performs best under an eclectic approach. Likewise, a teacher whose interests in reading are wide ranging, open, and free may have difficulty providing the finite choices and structure some children may require to learn to read. In providing these illustrations, of course, we do not want to make value judgments about teacher personalities and instructional philosophies, but merely to call your attention to the individuality of teachers as well as students as determinants of the scope and sequence taught.

SHOW TRANSPARENCY 13

The practitioner who feels that perceptual and processing tasks form the basis from which other learning proceeds would prescribe these tasks as essential. Instruction would involve the remediation of these processing skills before the introduction of basic academics. However, we do not believe that one instructional approach has to follow the other, nor that perceptual and processing tasks are necessary prerequisites to the generalization and acquisition of academic ability. Instead, we believe that skill development is quite specific and requires concentration within that area of specificity.

We concur with others that developing underlying abilities or psychological processes is an indirect and ineffective way to lead into reading instruction. The issue has basically been one of reading readiness, since neither advocates of process training nor of the skill approach are in disagreement about the need to learn basic reading skills. The two questions have been: (1) Should educators emphasize the development of underlying abilities which supposedly provide the foundation for learning and therefore facilitate the subsequent acquisition of reading skills? (2) If so, how much time should be devoted to this effort? Since the answer to this first question seems to be in doubt, a response to the second question is not worth pursuing.

In light of the growing amount of nonsupport for perceptual and process training, we concur with Arter and Jenkins (1979) that there should be a moratorium on classifying and recommending materials and programs that claim to improve underlying abilities, at least in their present form. We feel as Torgesen (1979) does, that there is a need to change from a child-centered process approach where the difficulties are identified as being within the child, to one of delineating the processes required for the performance of specific tasks in specific settings. This approach would certainly put more emphasis on the requirements of tasks and how teachers and support personnel present them.

SHOW TRANSPARENCY 14

Some people would argue that materials in themselves are neutral in the learning process; they believe it is the use of materials by *teachers* that makes the difference. We agree in part with this statement, especially with the part about teachers being catalysts, but materials themselves are not neutral. We view them, instead, as being basically normative in as much as they demand the same amount of performance from each student regardless of ability. Unless they are used judiciously, they can function as deterrents to the learning of particular students.

We concur that having a good variety and supply of materials on hand certainly makes the job of teaching easier. This is especially true if at the core of those materials is a basal program or two in reading that the teacher feels confident in using. We would also hope that the teacher would have access to other reading resources and have taken the time to select a variety of supplemental materials written at different levels of difficulty and appealing to the different reading interests of students. The availability of such resources is a real asset to the teacher, provided there is a deliberate attempt to match the material to the reading ability of the child.

In matching material to the beginning or disabled reader's skills, we feel that the difficulty of the material is a more important factor to consider than the interest level of the material. It seems that the ability to evaluate whether material is interesting or not is contingent upon sufficient reading experience to make such a judgment. If a child is still basically and/or functionally a non-reader, upon what basis is he/she going to make a judgment, other than perhaps stating that all reading material is uninteresting? The fact is that even if a high degree of interest is shown toward reading a selection, interest is soon smothered as the child discovers it is too hard to read.

Trying to match materials to children and monitoring the relative success of the match for the teacher is an unending process. The process does not seem any easier when one also realizes the amount of variance in difficulty there is in instructional material. Within the primary grades, for example, the reading difficulty of basal readers will vary six months to two years: and within the intermediate grades, one year to four years. With such sizable variances, one can see how use of reading materials, not to mention their *misuse*, can result in a mismatch and become a deterrent to reading.

SHOW TRANSPARENCY 15

Assessment is not a static process unrelated to what is happening in the resource and regular classrooms. To be useful and effective, assessment data must not only accurately determine what the student is able to do, but also accurately assess what he or she is expected to do across various course content. Without a clear understanding of the curriculum demands placed upon the child, planning will not be as continuous as it should be and will very likely lead to erratic and fluctuating patterns of student behavior.

Accuracy is a relative term, though, especially when it comes to assessment for instructional purposes. Criticism of school psychologists has been leveled by teachers for recommendations based on general evaluations of children's overall functioning, and justifiably so, because this form of input does not accurately reflect teachers' needs, nor does it contain sufficient specificity to enable them to make sound instructional decisions. If an evaluation is to be useful to a teacher it should be directly related to both the skills of the student and what he or she is expected to do within the classroom curriculum. Data which have this type of direct relevance for teachers are appropriate because the information can be applied efficiently and effectively in the classroom.

SHOW TRANSPARENCY 16

If assessment data can't be converted into direc instructional decisions, then there is serious question about its usefulness for the teacher. Likewise, if the information from one learning task is not related to the next learning task, the teaching activities are not coordinated and will fragment the learning experience. In both cases, assessment must be focused on the content being taught. This assures that assignments complement each other and are at the appropriate instructional level for the student.

A curriculum based orientation to assessment encourages teachers to make ongoing instructional decisions and to test these decisions continually via student performance. We prefer that teachers be more concerned about the immediate instructional suitability of each of their decisions than about the long range measurement of student progress, believing that progress will take care of itself if there is evidence that teachers are making sound instructional decisions on a daily basis. In stressing a logical flow between assessment and teaching, we have found it beneficial to identify and adhere to some general guidelines whenever the primary purpose for assessment is curriculum based. We call them "convertible data", "comfortable performance", and "complementing tasks".

As I stated before, the whole purpose of assessment is to make sure that assessment data are directly related to teaching activity. If the information that you receive cannot be directly translated into instructional decisions, then it has limited use. Perhaps that is a major reason why school psychologists today are having some trouble with credibility—they either don't have the ability to convert assessment data to instructional suggestions or the suggestions they are making are all "canned".

SHOW TRANSPARENCY 17

The first general guideline for curriculum based assessment is the principle of convertible data. What we mean by "convertible" is the ability to change, or to transform. To take individual responses (or scores) on the WISC or the WRAT Reading Achievement and convert them to instructional information, is a very tenuous practice. To do so with responses (or scores) from the ITPA and other well known instruments and even some of our reading and math tests is equally unsubstantiated. In other words, these scores are only samplings and they have gaps; you may have to look further.

The problem doesn't end with just standardized testing though. Look at this example, which is from a real case. (point to transparency 17) This is an illustration of a reading test measure, and what is shown is the error pattern demonstrated by this particular student. If you will look along here with me (point to exact spot on the transparency) you can see that we have a series of errors in which the student shows 11 aids, 3 omissions, 1 insertion, 18 substitutions, and 10 repetitions—43 errors in all, in a 70-word or so passage selection. In terms of comprehension: 50%; in terms of speed: rather slow, wouldn't you say? Now, when you have that kind of diagnostic information, how convertible is it? Does it show you what to do in the reading class? Actually, you may be overwhelmed by the errors, but it really doesn't tell you the instructional direction in which to proceed. Mistake analysis wouldn't do any good under these conditions either. It is obvious from th total number of errors that this passage is extremely difficul for the student. It is doubtful that you would be able to identify any particular reading pattern, since the student exhibits a variety of reading errors. Neither speed nor comprehension provide much more information, so what do you need then?

You could drop back to a lower reading level. Even if you find a suitable passage which the child can read, though, you are left with only a reading sample. You still have the difficult task of matching that reading sample to other suitable performance levels. What you lack is more assessment. Thus, you always have a tenuous situation under such circumstances.

So, some of the most commonly used reading instruments do not yield the kind of precision needed to make instructional decisions, particularly when you are overwhelmed by errors being made. Data has to be convertible in order to be useful for instruction.

SHOW TRANSPARENCY 18

The second area I would like to address is the area of comfortableness. The student must be at ease with the task. A report of research in the 1979 *Reading Teacher* (Harris, 1979), says, "The easier the reader was for the child, the more progress the child made during the year. This held for both boys and girls, and for above average, average, and below average readers. The best average gains were made by children who made fewer than three errors per 100 words; and furthermore, the easier the material was, in relationship to the child's reading ability, the better his or her classroom behavior tended to be."

So there seems to be a direct relationship between students' ability to handle reading material and how well they behave in class. This apparently applies to good readers, average readers, and poor readers. But there is still a range of comfort to consider. Apparently it is not harmful at all for students to fluctuate between the instructional and independent levels of reading. In fact, it is quite useful to provide material at independent functioning levels in the reading task.

The overriding problem in assuring a successful reading match, is to control for difficulty *within the curriculum material*. For the inadequate reader who reads below his assigned grade level, how are you going to find appropriate material? Often you are left to your own devices. We are going to show you what you can do under these conditions.

As Harris says, "Some teachers do not seem to realize how few unknown words it takes to make a selection difficult for a child. With the best of intentions, they keep many children struggling with material that is unsuitably hard for them."

SHOW TRANSPARENCY 19

The third area that you should consider in these kinds of assessment activities is one called "complementing tasks." Complementing tasks are defined as tasks which contribute mutually to the development of the whole; or, in simpler terms, tasks that go along with and help to strengthen one another. For example, does a drill activity follow the development of a task? or does the task lead to a logical conclusion? Those are the prime questions in considering complementing tasks.

Here is an illustration of this condition (point to transparency 19, and tell participants to refer to page W-11 in their worksheets). As you read it over you will see how assignments can be competing with rather than complementing each other.

PAUSE FOR THE GROUP TO READ THE MATERIAL

This is another one of education's paradoxes. The student who doesn't have any problems stays within the same curriculum and consequently doesn't have a lot of variation to contend with. But the student who is experiencing problems and is provided with multiple approaches, actually has an increased problem in that he has to struggle with multiple curricula. We sometimes ask students with less capability to work under more conceptually complex conditions than students who are doing well.

SHOW TRANSPARENCY 20

Not only is this paradox illustrated in reading, but also in other areas of language arts. For example, here is the case of a girl named Rebecca. Rebecca is ten years old, and she is asked to read this particular passage of "A Wise Idea". Now you read the content—it is on page W-12 in your worksheets.

You will note now that Rebecca has made 19 or 20 errors. There are 19 unknowns, and one hesitant response in that short paragraph. In other words, the passage which was taken from her classroom reader, is again too difficult.

SHOW TRANSPARENCY 21

Rebecca was asked to do an assignment from a different series, *Language in Daily Use*. Her instructions were: "Here is the story. Write an ending to the last sentence, and make a picture from the story."

The story is about Tip the baby elephant who lives in the zoo. There are five words that Rebecca does not know; those five unknown responses are part of her writing activity, but not a bit related to Ann and Yuon in the preceding story.

SHOW TRANSPARENCY 22

Now what do we see in spelling? Usually spelling lessons are assigned by groups of similar words (as they occur in the spelling book), not by function.

And here again, in this case, the spelling assignment is not addressing anything that is being done in the reading assignment. It is taken from *Spell Correctly*, pages 56 and 57. This is typical of how assignments are made. Notice how poorly Rebecca spelled.

To reiterate, materials for the three tasks (reading, writing, and spelling) are unrelated. There isn't any coordination, and they don't complement each other in any way. The spelling is a total loss. We can do something more consistent for Rebecca.

For example, we would want the words that she is having difficulty with in reading to be used in the writing and spelling assignments. Some may think the idea naive, but we feel that it helps a child to function.

What happened in Rebecca's case? Well, we put her into an easier reader, and in doing that, we identified language arts activities from that particular reader as well as spelling words. Through those coordinated activities, she attained 100% in spelling. Because all of the assignments were related, she understood them better.

So remember the concepts of convertability, comfortableness, and complementing tasks. Assessment should lead directly to instruction!

SHOW TRANSPARENCY 23

That is the background. We want you now to actually use the model. The first thing you have to remember is that it is basically a ratio system. Any time you deal with the concepts of drill and reading, you will be using ratios; you will always have a pair of percentages of knowns versus unknowns. It is important to control this ratio, so that the experiences can be profitable for the student.

SHOW TRANSPARENCY 24

There is no need for a teacher to create new materials for capable readers. There is enough printed material available that is useful with capable readers, and the time saved can be used for those students who need the extra help. Rather than suggesting that much of reading instruction should consist of teacher-prepared materials, we are advocating the correct use of options that are available. If you have a capable reader, look for material that is already printed, and is appropriate for the student's reading skill level.

As you look at children's skills and find a less capable reader, there are some other options that must be employed. For example, when you find a child with limited skills, to the extent that it is extremely difficult for you to locate appropriate printed material, then it may be appropriate for you to start using teacher-prepared material. It is at this point that you have to break the cycle of failure for the student, and it may take special material that s/he can succeed with. The only other option for this type of student is probably to use some kind of aural/oral program, like auditory tapes or "read along". But if you feel that the child still might be able to benefit from reading experience, and acquire some basic reading skills and functions, then teacher-prepared material becomes a very viable option.

SHOW TRANSPARENCY 25

Now, what do we mean by teacher-prepared materials? First, let's give an illustration of the kind of child for whom we would consider providing such materials. Here we have Holly. She is nine years old and is placed in a third-grade, self-contained class for the learning disabled. Look at the assessment of her word pool. The words that Holly knows are "one, two, three, green, red, purple, orange, a, I and Holly". You can imagine the mass of unknowns. There are ten known words, and this student is a *third* grader! In other words, she has acquired, if you average that out, three words per year. Another thing you have to remember about teacher prepared stories is not to be in a hurry. Some of these kids are *really* far behind. If we can get Holly to learn two or three words in a week, we will have done as much as some people apparently have done in a year. So let's take it from that perspective.

SHOW TRANSPARENCY 26

When you start the instructional plan for this girl, keep in mind that you are going to be dealing first with drill, and then with the reading experience itself. This chart might help you conceptualize what reading is about . . . or at least what item-selection is about.

When you have a student of very low ability, you can offer very little challenge; however, that challenge is going to be in proportion to what the child knows. As children progress in skill, you can offer more challenge, but always in proportion to their abilities. The range seems constant and only the volume of material changes.

Let's look again at Holly. She knows ten items, and we want to increase that 15 to 30 percent. How many items can we add to the ten she knows for the first assignment? (pause for response from participants)

We could assign from one to three new words bringing the goal for known words up to perhaps 13. Whether to assign one, two, or three, is where the new instructional decision comes into play. As Holly increases her skills, to, say, 20 to 25 words, we might find that we can increase the number of unknowns introduced to four or five items, and maybe even six. It will depend upon her acquisition rate. What we are trying to do with the graph (point to transparency) is to show the geometric relationship between a small amount of ability and more ability. The percentages of knowns to unknowns do not change.

So now what are we going to do for Holly? Let's go back to our rules. What was the first thing we learned to do, after the assessment is complete? (pause for response) Prepare what?

Prepare the content. Prepare what the student is going to be reading. Why don't you prepare your drill? (pause for response)

(answer) The drill should come from the content. Not vice versa. A lot of teachers will start their drill, and then the content is lost. Prepare your content. You know the new words that you are going to introduce. Put them in content form. Why? (pause for response) We are after meaning. We are after understanding. Unless there is content, you are not going to get it. By preparing your content first, that content will then dictate the drill that you will provide.

SHOW TRANSPARENCY 27

Let's look now at our content. Here is a teacher prepared story: "One, two, three. One, two, three. One red book. One green book. One purple book. One, two, three." You will notice now that there is one new word introduced, and never over six knowns used. What is the ratio (pause for response)? One out of seven, which is about 15% challenge.

Comprehension is also content. We try to force comprehension into a reading format. Notice that the questions here are not introducing new words like "what", "was", or "how many" books, because they would be words that Holly doesn't know. Notice these examples: One (Blank) three. (Blank) red book. By starting that way, we provide just that much more experience; and, perhaps more important, the chances for Holly to master the assignment are high.

SHOW TRANSPARENCY 28

Now let's discuss the drill procedure. Here again, we do not want to drill Holly on just the unknown word. We want to sandwich unknowns in with what she knows so that drill is a successful experience. In this way her interest is retained and she will probably have the attention to stay with us.

In this drill activity, we use a simple spinner with the list of known and unknown words from the assignment. When the spinner stops on a word, we may ask her, "What is this word?", or we could say, "Write that word for me", or "Spell it for me". All of these tasks would be appropriate drill exercises for this assignment.

Then what do we do with Holly? We would continue asking Holly to perform drill tasks using these words, writing her own story perhaps, or making up sentences, but we try to reduce the chance of error or mistake to as near zero as we can. We want Holly to have a wonderfully successful reading experience.

If we provide that kind of tight control, and we still note errors, then we will be able to pinpoint those errors more directly. We will be able to make another logical hypothesis about where to go. In other words, *we* are the instructional planners. We are dictating exactly what content is chosen, and how it is to be presented as opposed to letting the publisher, who doesn't know anything about Holly's particular needs, have the responsibility. This is a real diagnostic/prescriptive approach.

SHOW TRANSPARENCY 29

Alright, let's see you try it now. Here is an illustration for you to use. Remember that you are to prepare the content and the comprehension questions first. Then, you are to prepare the drill.

We have a nine-year old boy. He is a resident at the school for the deaf. His sight words consist of this series (point to transparency). His letters consist of these (point to transparency). You may want to teach him words which contain additional letters, and also work on rote letter recognition.

Allow the participants to either work individually or in small groups to do participant worksheet W-18. They are to:

1. prepare the content
2. prepare the drill, and
3. prepare a reading story from the information given on the worksheet.

Allow ten to fifteen minutes for the participants to complete the worksheet, then discuss the outcomes. Record some of their examples on a blank transparency or chalkboard. Prepare a sample story in advance or use worksheet keys.

The following script is a sample debriefing as it might occur following the participants' completing this activity.

"Well, you've done very well. Now, if you have three new words, you will be up to 15 knowns. The total known word pool should be accumulating.

"You also want to pay attention to the rate of acquisition to decide whether to add one word, two, or three a day. Depending on the rate of acquisition, you may even wait an extra day before adding a new word.

"But if we found that two new words were no problem, we might give him two more new words per day for several days. If we could take three or four, we would do that—at least we would try it to see. You should try to push for that ratio of challenge, rather than being satisfied with just some given number. If you give him three new words, and he fails a couple, drop back to one; but always try to push for that little bit more so there is a challenge without the loss of success.

"Depending also on what the student's tolerance is for that challenge, you might want to stabilize for a day, to make him/her feel comfortable."

The idea behind teacher-prepared stories is to end the stagnation that the student is experiencing, and to get some movement. How much time you have to prepare such stories and drill exercises depends on you and what you are trying to do with that child. Once you know how to get the word lists as an assessment device to begin with, you can build the list to whatever level the time will allow. At this point you will be moving toward the next stage, that stage in which the student would read from some kind of printed material so that you can make less work for yourself. You will always be trying to work your way out of the job of teacher-prepared stories.

Have participants complete the Instant Replay for this section. Allow 10-15 minutes, then discuss the Instant Replay using the keys provided.

PRESENTATION: APPLICATION OF CURRICULUM BASED-ASSESSMENT READING PART II

SHOW TRANSPARENCY 30 QUICKLY
THEN SHOW TRANSPARENCY 31

This part of the workshop deals with a concept called *Teacher Transition Stories*. Let's look at the options again. If you feel that you have done enough work in teacher-prepared material, or if you feel that the student has enough knowns, then using teacher transition stories becomes a viable option for you. The reason why they are so useful is that they provide a direct goal which is to move the student right into the printed material. Instead of your having to create in your own mind what to write about, the curriculum material dictates the direction of your writing. That is why you are making these transitional stories.

SHOW TRANSPARENCY 32

In our first illustration, we have an eight-year-old boy in the third grade who has been recommended for diagnostic evaluation. He is presently in a class that is reading in the reader, *Jim Forrest and the Bandits*. These are his responses for the first paragraph. In this short thirty-word paragraph, Rick knows about ten words and has about twelve unknowns. Immediately you can see that the instructional ratio is wrong. Whenever you set this information up as a ratio, you can see what the level of difficulty is; in this case there is just too much difficult material.

SHOW TRANSPARENCY 33

Our decision for this boy is to base our instruction for him in the story that he has been assigned—"The Red Truck". But first we must do an assessment to learn whether that is realistic. The assessment cannot be done only using the initial paragraph; it needs to address the whole book, because that is where we want the boy to be successful. So we turn to the word index, and do an assessment using all the words that appear in the book. We find, as it shows in the transparency, that of the total number of words, Rick knows 30 words. There are 99 unknowns or hesitants. This tells us that just to allow him to continue in this book as he has been would mean that *every* paragraph would be at the frustrational level.

But by systematically preparing that material the accumulation of his word-pool will be such that we will be able to gradually introduce the commercial reading book to him again, and sustain him in that material once there.

SHOW TRANSPARENCY 34

On the basis of the knowns, we will construct our first transitional story. You will notice here that within this list ("mountains", "ranger", "air", and "on top") are the challenging responses. We had 30 known words to work with, so we will introduce six challenging words.

While we are preparing teacher-transitional material, we also prepare some comprehension questions (point to the lower portion of transparency 34). For example, here we have "Uncle Don took Jim to the ________". The student didn't have any trouble with comprehension. In fact, in the first transitional story, he only made one error. The asterisks are there only to show the challenge words. They do not indicate errors.

This is the first of a series of such stories intended to bring the student up to a point where he can handle the regular reading assignments. The words learned in one story are integrated into the next, or are at least practiced in some form of drill right along. If the words aren't continually integrated in this manner, you get what is called a learning fragment—something learned that has little or no meaning in context. For Rick there were eight transitional stories in all, and he learned six or seven new words in each episode. Now, let's see what happened.

SHOW TRANSPARENCY 35

You can see that his unknowns dropped off dramatically with the training, and that his knowns increased significantly. There is an interesting relation between the drop in the unknowns and the rise in knowns. As new words are introduced, they don't immediately take on the properties of knowns. There is still uncertainty with the response.

It is important, in producing transitional stories, that you start at the beginning of the material—paragraph one. In fact, with Rick, it took two transitional stories before he could read paragraph one of the assignment. Then it took a couple more before he could read the second paragraph. You work it paragraph by paragraph; the accumulation of the word-pool and practice are going to eventually overcome the word deficit. There will be no need to drop back to a lower level reader. Rick can be successful in the same reader that the rest of his class has been assigned. Can you see how very important that is?

Once he is reading successfully in the book, you should always read ahead two or three pages to see exactly what his knowns and unknowns will be and be ready for them. By looking ahead, you anticipate those new words. In Rick's case, the drill simply consisted of pointing, "What word?", "What word?", etc.

The idea behind using teacher-prepared transitional stories is not to have to continue to prepare them, but to make the necessary transition into the printed material. What is the rule of thumb as to when you use a transition story?

PAUSE FOR AUDIENCE RESPONSE OR COMMENT.

First look at the accumulated word pool. If it is sufficient to make the transition, then look at the content. Read the book, and see what it is about. Write the transitional stories in terms of the exact content of the book—same words, same characters, etc.

Teachers will spend less effort doing transitional stories than they will other teacher-prepared stories, because they know the content that has to be included. Additional important points to be considered are "consistency of review", and "quantity of new material introduced".

Consistency of review is needed so that what is taught once is not forgotten. In many of our stories today, you hear a word in one story and you never see it through the rest of the book. It might even be one of those very low-frequency words that we could have done without to begin with. We don't want to use those words with students. We want to use words that are functional, those that elicit imagery and are used frequently, so that the student will be seeing them over and over again.

The other important consideration is quantity, or how much material to present at one time. Miller (1956) wrote an article about the magic number seven, plus or minus two, which can be used as a guide. If you give more than 9 or 10 new items of information at one time, you are asking for trouble. Why do you suppose students are given 20 spelling words at once? It is probably only tradition, and since some students have no trouble with that number, it is continued as a practice.

We saw with Rick an acquisition rate of six or seven new items. He was acquiring and retaining those. With another child, you might find an acquisition rate of only one or two new words at a time. We can try to provide a little bit more if it feels right, but not much more. With Rick, for example, instead of just being satisfied with six, we might have pushed him to seven. It is alright if he makes an error now and then, but if he starts to make two or three errors, we will drop back to five and six new words. You will find that there is a quantity that each individual child will be comfortable with in each new learning experience. You always have control of that quantity.

SHOW TRANSPARENCY 36

Here we have Susan's assessment. She is an eight-year-old third grader. Susan is making a number of errors. She has about ten knowns, one hesitation, and a lot of unknowns. Also assessed in the key word list were another four words, "a", "big", "girl", "boy".

SHOW TRANSPARENCY 37

This transparency and the last one provide us with enough information so that we can obtain a ratio of knowns to unknowns and prepare a teacher transitional story. In fact, that is what we are going to do as a group activity. You will find the same data in your worksheets on pages W-26 and W-27.

Instruct the participants to work in small groups of three to five individuals. Have each group prepare a transitional story using the information given on pages W-26 and W-27 of the participant worksheets. Give the groups about fifteen minutes to prepare their story and then have one representative from each group read the story that their group has developed. Give positive feedback and support to each one. After finishing this activity you will be giving a summary or conclusion for this section of the workshop.

SHOW TRANSPARENCY 38

Curriculum based assessment generates its own progress measures. You are constantly getting feedback that will affect the instructional decisions needed to be made for the next day, the next assignment, the next year, etc. This kind of feedback is cumulative.

We have discussed the rate of acquisition, but there is another kind of rate that you also want to be concerned with, and that is *fluency*. Rate of acquisition is how fast the student acquires new information; fluency is how fast the student uses it once it is acquired. So the rate of fluency has to do with the proficiency of use after acquisition.

For example, Rick took a minute and 21 seconds to read that little 30-word passage. In other words, it took him more than two seconds per word. After he had completed the transitional stories, he was able to read the same passage in 23 seconds. His speed had increased four times. He was still a word by word reader, but certainly his fluency had increased dramatically.

Knowledge and comprehension are concepts that should also be considered. Knowledge can be defined simply as basic understanding. For example, we ask Rick, "Tell me what that word is?" or "That letter?" We are asking for correct identification. We think of this as word knowledge, but comprehension should also be considered part of knowledge. A lot of times kids don't know the words because they don't know the meaning of the words—they have never attached any significance to that group of letters.

Another kind of comprehension is paragraph meaning, which has two parts: literal comprehension and inferential comprehension. For example, there is the case of John, a resident in a residential care center for disturbed children. He was asked to do a unit on the solar system. He could read the material which was at about the third grade reading level. It went something like this: "The earth gets its light from the sun." The comprehension question said: "Where did the earth get its light?" John could answer the question by answering, "The sun", because the question asked for a literal interpretation. But when asked the question "Why is it dark at night?" He could not respond with a correct answer. The second question required inferential comprehension, and John was operating on a very literal kind of comprehension level only. If you know this about John, it is meaningless to ask inferential questions, because you already know you are going to get an incorrect response. That is, unless you are actually assessing his ability to deal with inferential questions.

The point is, you really have to know your student in order to prepare appropriate comprehension questions. Comprehension of reading materials requires the development of several skills: understanding the verbal language, language experiences and vocabulary, word recognition facility, visual imagery, a questioning attitude toward the reading material, and skills in analyzing what is read.

SHOW TRANSPARENCY 39

Now we are going to shift gears a bit. We will briefly discuss modifications of reading related assignments.

SHOW TRANSPARENCY 40

We ought to be able to anticipate the frustration of a student and make modifications in advance. Let me share an example of how this can be done.

Here is Ann. On this test she got 5 out of 22 correct. Everything that is circled over here represents an unknown response. In other words, she doesn't know "handle"; she doesn't know "needle"; she doesn't know "puzzle" or "bubble". Well then, how can she possibly answer the question "I have a __________ pipe?" if she doesn't know the word? Let's go one step further. Of the 22 choices to fill in the sentences she only knows seven. Now, how is she going to answer 22 questions? She may even understand the concept that the question calls for, but she simply doesn't know the words that are provided for answers. That is why she gets 5 out of 22. You can imagine the amount of time that is required for that child to sit through a task which has to be, for her, a very frustrating experience.

Knowing what we have already said about modification, see if you can help figure out a way to control this assignment in the student's favor. You have 22 responses. You know that she knows seven of them. With seven knowns, how many challenges can we provide and still keep it in an instructional ratio?

PAUSE FOR RESPONSES AND COMMENTS FROM AUDIENCE

One or two, that's right. Good! Now what can we do to modify this assignment to put it at an instructional level? Notice on the next transparency what we can do.

SHOW TRANSPARENCY 41

See how much has been inked (or whited) out? By modifying the assignment in this way, the little girl is able to work on the same assignments as everyone else, to receive a percentage score in terms of her overall performance, and to feel good about it. The teacher had to spend only about 30 seconds in modifying the assignment sheet. That is something that could have been done the day before with a little pre-planning.

SHOW TRANSPARENCY 42

This is an assignment that was given to a student who only knew the words listed at the bottom of the transparency. You can see that it would be frustrating to the student. Can you think of ways to modify this assignment so as to control the frustration level?

If there is time, take a few minutes to elicit suggestions as to how the assignment might be modified. Otherwise (if there isn't time) point out that the assignment appears on the participant worksheet page W-28, and that they might want to work on it at their leisure, for practice.

Now let's take a look at another example.

SHOW TRANSPARENCY 43

Here is Calvin's assignment, and you can see that he did very poorly. In fact he missed every item, but look again. There are words (those circled) that Calvin does not know by sight. Consequently he is perhaps being confused and therefore frustrated by the fact that he doesn't know many of the words.

The modification made here, was to simply eliminate the unknown words. For example, by leaving out the word "good" in the first item, we haven't changed the meaning at all. In other words, the word "good" isn't necessary to solve the first item, and, in Calvin's case, it only confused and frustrated him. In other instances we simply eliminate one of the three choices, and we eliminate the final item because there are just too many unknowns there.

So what happened? When Calvin was given the modified version of the assignment, *he got 7 out of 7!* Now someone may say, "Well he should have; you made it so easy for him." Well, what is learning all about anyway? Is it the purpose of education to create hurdles for students and then pass only those who can jump the hurdles without assistance? Learning proceeds best when there are successive experiences of success with tolerable levels of challenge. And students vary in their levels of challenge tolerance.

In Calvin's case, all those adjectives and verbs need to be eliminated. These are the kinds of things that can be done in advance if you know what your students know.

With respect to record keeping and accountability, this instructional system gives useful and sensitive baseline data. Knowing that a child has six knowns is a pretty accurate baseline and is much more sensitive to change than a grade level measure of, say 1.2. So keep track of newly acquired wo[illegible]

SHOW TRANSPARENCY 44

On this chart, for example, you will notice that there were eight training sessions, and that the student started with five known words. You can see the number of words that were added to the word pool, and you can see the kind of review that occurred from time to time. For example, "rat" was taught once, and then it was reviewed. Over the 8 sessions, the child has improved to a level of about 24 words known.

SHOW TRANSPARENCY 45

Another way to keep track of the words and the student's progress is called the "word box". In using the word box, every word that is introduced to a student is recorded in a box (or on a 3 × 5 card, or whatever). If it is a known response, it is given a black check; a hesitant response, green; and an unknown response, red. Then, everytime it is reviewed, the status is checked again. You can see if the response gets two or three black check-marks (which means it is probably a known word) or has intermittent responses shown by alternating colors (which would probably indicate either that drill is needed or that too many unknowns are being presented at a time). These words (on cards usually) can then be accumulated by groups: knowns, unknowns, and hesitants, and can give a graphic illustration of the growth of the word pool. In order to check progress, you only need to check the known word cards at periodic points, say at the end of each week or month.

Remember, in developing any student's word pool, always use words taken from the content of his or her regular assignments. The words should always have meaning to the student. If you just try to teach so many words from a word list, you are not going to get comprehension, because the content is not meaningful.

This completes the third presentation in the workshop on curriculum based assessment, and we are now ready to do the instant replay for this section.

Answer any questions. Have the participants complete the "Instant Replay" either on their own, or as a group. The Instant Replay is found on Participant Worksheets W-32 and W-33. If done individually, allow 15 minutes to complete and then go over the answers orally. Refer to the Instant Replay keys for possible answers.

PRESENTATION: CURRICULUM BASED ASSESSMENT APPLIED TO MATHEMATICS

SHOW TRANSPARENCY 46

Now we are ready to look at how curriculum based assessment can be applied to mathematics. If you are interested in a thorough curriculum based assessment, then mathematics has to be addressed.

SHOW TRANSPARENCY 47

A person conducting a curriculum based assessment must have a fundamental understanding of what mathematics entails: readiness skills, facts and operations, and application of quantitative concepts and skills. Most of you probably understand what some of the typical areas are in the scope and sequence suggested on the transparency. Before we start looking into the sources of mathematics errors, which can be assessed using curriculum based assessment procedures, let's quickly go through the scope and sequence and have you check off on your worksheets whether you are (1.) familiar with the procedures, (2.) need review, or (3.) are unfamiliar. This self-rating will assist you in applying the information and skills which will be presented in this workshop.

Quickly go over each area covered on Transparencies 48, 49, and 50. Have the participants rate their knowledge of each area using their worksheet page W-25. After ratings are finished, tell them to use this as a reference during the remainder of the presentation and applied activities for assessing mathematics ability.

SHOW TRANSPARENCY 48
SHOW TRANSPARENCY 49
SHOW TRANSPARENCY 50

After completing these three transparencies, then

SHOW TRANSPARENCY 51

Most of this portion of the workshop will be spent in considering the various types of errors that students make and trying to pinpoint what those errors are. It is going to be kind of a "self-discovery" because we will show a series of work samples and from those samples you will identify the errors. Some are rather obvious and some are rather obscure. This is a way of illustrating for you some of the procedures employed in trying to identify the errors kids make. We are going to look at some of the assumptions we make about knowledge and facts and how these are often erroneous. The child's product may look accurate but when you investigate the process the child is going through, you may find errors.

A common form of error is in using place values, where the child is not using the ones, tens, and hundreds columns correctly. Algorithms are the basic rules that we employ to solve problems, so every operation has a set of algorithms, as well as a series of stages. We also have a final category of errors which consists of insufficient facts and rapid responses. As the fact facility of the student declines there is a tendency to give more rapid responses. We will illustrate each of these types of errors using examples.

SHOW TRANSPARENCY 52

In the first examples we will be looking at errors in operations. This problem is not usually that serious, though, provided that the teacher quickly discovers the source of error. Students making errors in operations generally have acquired the facts necessary to complete the operation, but have chosen the wrong operation. Refreshing their minds about paying attention to the sign when selecting the correct operation, contrasting the conflicting operation, and working through a problem or two may be all that is needed. Using the three examples on your worksheet (W-36), identify the type of operational error for each situation.

Show Transparencies 53, 54, and 55 to assist in the discussion of the three examples. Allow several minutes for participants to respond to each one.

Now we will consider another common source of error: failing to apply the appropriate rules or algorithms.

SHOW TRANSPARENCY 56

Algorithms refer to the rules and procedures for solving mathematical problems. Many students have difficulty in mastering algorithms; instead of following established steps they apply their own set of procedures. Before making any type of instructional recommendation, it is necessary for the evaluator to first determine where the error exists as well as the faulty procedures used by the student in problem solving. As Ashlock (1972) suggests, look for patterns of error and not isolated events. Once you feel the error has been identified and you understand what the student is doing, then begin to make instructional decisions. Check your own analytical skills by identifying the error patterns or strategies used by the students in the following examples.

Show Transparencies 57, 58, 59, 60, and 61 to assist in the discussion of the examples. Allow several minutes for participants to respond to each one.

The source of errors we will look at next deals with the concept of place value.

SHOW TRANSPARENCY 62

In the place value error, there is the misuse of numbers in the ones, tens, or hundreds column, etc., with mistakes occurring within both the process and the product phases of the task. Errors of this variety can be very confusing to the student, particularly since the student understands the logic to his own problem solving strategy.

Again, let's try to identify the errors, this time in place value. You will find examples on pages W-39 and W-40 of your worksheets.

Show Transparencies 63, 64, 65, and 66. Allow several minutes per transparency for participants to respond. Use the answer keys to debrief these examples. A sample explanation of the Sims example follows:

Notice the final example—Example L: Sims. Because Sim's approach to addition was very unusual, you may need an explanation of the logic that he applied when regrouping. His method consisted of addition in the ones column to the sum of nine, carrying the difference to the tens column, and then adding the difference to the addends of the tens column. For example, 38 plus 76 was processed as $8 + 1 = 9$ for the ones column. Since only 1 was taken from the 6, 5 was left to carry to the tens column. His logic followed that $5 + 3 + 7 = 15$, and that 15 from the tens column and 9 from the ones column totaled 159. In short, he was operating with a base of nine while carrying the difference from the ones column, instead of using the concept of 10 and carrying the number from the tens place.

SHOW TRANSPARENCY 67

Occasionally, one observes a rather purposeless pattern of guessing, where randomness of responses emerges simultaneously with a breakdown of the limited repertoire of facts possessed by the student, as shown in this example (T-68).

SHOW TRANSPARENCY 68

Random responses are so obvious that they are easily detected. Such performance is in sharp contrast to work successfully completed and handed in by another student. Experience has shown that work completed does not always equate to work understood and random responses frequently coincide with a lack of sufficient facts. This form of error is illustrated by the example on the next transparency.

SHOW TRANSPARENCY 69

At first glance Leonard's ability to write numbers seems adequate, however there are obvious errors such as the repetition of certain numbers and the omission of the entire row of 60's. At this point in his performance, an even more fundamental question should have been asked. "Does he even know his numbers?" If he did not possess adequate number recognition, how beneficial was it then to write the numbers in the volume required of the task? By randomly pointing to various numbers on this assignment and asking what they were, it was soon discovered that one-to-one correspondence between the printed forms and Leonard's number recognition skills was limited to the numbers 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, and 14. In other words, 89% of the task was unknown.

The assignment was inappropriate, obviously. It did not facilitate his acquisition of additional numbers but required an exorbitant amount of time to complete. With this in mind, what would you recommend as changes in this assignment for Leonard?

PAUSE FOR RESPONSES, COMMENTS, AND QUESTIONS

And now for another example:

SHOW TRANSPARENCY 70

There was quite a contradiction in this second grader's performance. There were very few mistakes on math assignments that were handed in to the teacher, but when asked to work similar problems while being observed, Sharon performed much differently. Direct observation indicated that she lacked the concepts of adding by columns and regrouping. Instead, she counted each digit cumulatively on her fingers and recorded the total as the answer. Therefore 62 plus 51 was $1 + 2 + 5 + 6 = 14$. Apparently, she was certain enough that her addition strategy was incorrect to copy her responses from other students. This awareness was probably not shared by her teacher because of the large number of correct responses on assignments that had been turned in for grading. Closer observations of her performance also showed other inconsistencies. For example, when discussing the above problem, she said 51 was larger than 62, and that 14 was larger than 51. When shown a list of numbers she said 15 was 50, 17 was 70, and 13 was 30.

It is possible to use several different logical processes and come up with the same wrong answer, but in each case you would have a different instructional problem. In determining the error pattern of a student, take the time to test different hypotheses in order to discover the actual strategy used by the student. Do not make a double error by assuming and correcting for the wrong error pattern. Are there any questions about Sharon's error pattern?

PAUSE BRIEFLY TO RESPOND TO ANY QUESTIONS, AND THEN . . . .

SHOW TRANSPARENCY 71

Many sources of error were illustrated in the preceding examples. In most cases, the error pattern was quite obvious. In a few others, you might have had some difficulty identifying the pattern. To provide you with additional practice, we would like for you to analyze the five remaining samples. The samples are a bit more challenging and, in some cases, the sources of error overlap. Study each new illustration and identify its source(s) of error. Also comment on where you think instruction should begin for each illustration. Complete the five samples, making your best educated guesses before we discuss the cases.

Several options are available in this part of the presentation. The trainer can either have the participants work individually, in small groups, or in one large group with the trainer leading the group in analyzing each of the five examples. The example cases can be taken one at a time; or each small group could take one example case, work up the sources of error, and recommend instruction. In the latter case, a representative from each group could present the results with the trainer offering additional comments. Also, if time is a factor, and the workshop needs to be shortened, one or two examples could be selected as activities for this section instead of working on all five.

In any event the samples are given on Participant Worksheets W-43 through W-46 and on Transparencies 72, 73, 74, 75 and 76.

The following analyses are offered as debriefings for the five cases:

SHOW TRANSPARENCY 72

Patricia: The source of error for this eleven year old girl, classified as educably mentally retarded, was a lack of background knowledge. Since her work on two column addition with and without regrouping, along with some simple subtraction problems, was largely correct, the teacher assumed that she had full understanding of what she had done. (The circles prompted the subtraction problems, and the vertical lines prompted the addition problems.) Direct observation showed that she could verbalize the operations she was using. Pushing one step further and asking about the product values, however, revealed that she did not understand most of them. For example, when we pointed to 78 and asked what it was, she replied "seven-eight"; 99 was "nine-nine"; 58 was "five-eight"; etc. As whole numbers, she could only accurately identify products up to 17.

SHOW TRANSPARENCY 73

Kathy: This little first grader demonstrates two types of errors. First, she shows random responding when addition facts exceed the 2 + 3 range; and second, zero as an addend is consistently used as a one in the two digit problems. The teaching sequence of new facts would begin with the addends of 2 + 4, 2 + 5, 3 + 3, 3 + 4, and the mastery of the concept of zero in problems, 0 + 1, 0 + 7. Whether she has mastered the upper combinations of the 1 + facts would still need to be determined: e.g., 1 + 7, 1 + 8, 1 + 9, etc.

SHOW TRANSPARENCY 74

Edgar: His problem was using the wrong algorithm for multiplication. In two digit, two row problems, he multiplied and regrouped correctly with the first multiplier as shown by his first sub-product scores. In formulating the second sub-product, he multiplied correctly but reversed the number placement within the sub-product, so that 36, for example, became 63. The correction is to contrast the error by using the correct algorithms, model the desired response, and practice.

SHOW TRANSPARENCY 75

Gina: This seven-year-old represents our "banana-split" case. If you were able to correctly identify her source of error, you deserve a special treat for being one in a thousand. Without direct observation, in all probability, you are at a loss in discovering her error pattern, which was primarily place value. In adding, she would start by showing all ten fingers, take the bottom addend away from ten; then total the remaining number of fingers. Using 1 + 3 = 7 as an example, she would show ten fingers, take three fingers away, count the remaining seven, and record that value as the answer. In doing this, she disregarded the remaining addend. In correcting the problem, she should be taught not to start with a base of ten, but instead use only those numbers which are shown as addends in solving simple addition problems. Number recognition and counting were not a problem at this point.

SHOW TRANSPARENCY 76

Bobby: Bobby obviously over-relied on the use of prompts. His sources of error consisted of insufficient facts and place value in re-grouping. As a nine-year-old, he needed to be taught a more efficient procedure for adding two larger single digits than the prompting system he was using. And, of course, he needed to be taught how to regroup from the ones to the tens column. With addition facts, his problem was one of efficiency more than one of recognition.

Now it is time to consider ways to analyze these errors in order to overcome them in the end.

SHOW TRANSPARENCY 77

We have covered the kinds of errors that you are likely to see. There are several ways to analyze mathematics error patterns.

Task analysis is simply a procedure whereby you work backward and try to identify the sequential parts of a task. Task analysis can be done on any task without reference to a particular student's performance. You're just trying to identify the steps in the task. The problem with task analysis is that it can be so finite that its value is destroyed. There is a module out now that has seventy-five steps in folding paper. By the time you go through those seventy-five steps, the paper will probably have holes in it.

Another type of analysis is called "product analysis". It focuses on the outcome that will be evaluated and the way the student approaches the production of the outcome.

Product analysis is the study of how the child actually arrives at an outcome. It is the analysis of the product (or answer) as well as the way the child produced the answer that is important. Product analysis is not a single operation. Rather, it is an informal technique involving the examination of an assignment. What are the techniques used in product analysis for mathematics? There are four: 1) examination of the numerical responses, 2) observation of the student working on mathematics assignments, 3) having the student perform his assignment verbally while he or she is doing it, and 4) observing the amount of time it takes to finish an assignment.

Are there any questions about these basic evaluation techniques?

PAUSE FOR QUESTIONS AND/OR COMMENTS.

We will now review what has been covered in this section of the workshop, and we do this, as you know by now, by doing an instant replay. After that, we will be ready for the second math presentation, which is the concluding section of the workshop on curriculum based assessment.

Have the participants complete the Instant Replay found on Worksheet W-47 and W-48. Allow about 10-15 minutes for them to complete the instant replay, and then debrief, using the answer keys provided.

PRESENTATION
USE OF AN INSTRUCTIONAL DELIVERY MODEL FOR MATHEMATICS

SHOW TRANSPARENCY 78

Once you have seen the error patterns, you must change the focus from the error patterns themselves to determining the kind of instructional intervention that is needed.

SHOW TRANSPARENCY 79

Our prime objective in this section is to teach you how to convert information regarding insufficient facts, faulty math concepts, and procedural errors into sound instructional decisions to help the student overcome his/her math problems. In essence, we will show you how to establish and maintain math assignments on the child's instructional level.

There are two things to remember: the first is to fill in gaps in the student's fact system. The second is to work on his/her operations. We are going to break these down as separate components of this presentation.

SHOW TRANSPARENCY 80

We are first going to discuss the process of establishing instructional levels. We will have an illustration of the usual operations and how to correct them and some operational difficulties.

The teacher generally introduces each new fact and explains each step and the new operation for the student. Then the student is drilled on the fact and the operation until the teacher feels that the student has achieved some degree of mastery. After that, the teacher generally presents some kind of *concluding task* - an assignment from a book or math problem in the form of a worksheet - until s/he thinks the student understands the operation.

Task item selection is quite important. The central issue involved is the need for the student to learn a sequence of operations. Students who are experiencing problems in facts, are probably not using a regular sequence. You must analyze where the sequence starts from the perspective of the student as opposed to a recommendation from the text book.

One of the things that keeps students out of sequence is the rather random nature of item selection within our textbooks and other curricular materials.

SHOW TRANSPARENCY 81

Let's look at our first illustration. We will be assessing this math work sample, which we refer to as *assessment input*. Assessment input merely means we will be analyzing how well the student performed the assigned math sequence based on percent of problems correct and how the student approached the problems. This first sample of work involves addition and the regrouping of numbers to carry over added numbers to the next column. The sample is provided by a student named Bill. In this sample, Bill has successfully completed 35 out of 42 responses, for a grade of 83%. He understood and used the proper regrouping process. If he is completing 83% of his work, and understands the process of regrouping, do we have any cause for concern? Can you see areas of concern?

PAUSE FOR COMMENTS AND DISCUSSION OF POSSIBLE AREAS OF CONCERN ABOUT BILL'S WORK.

We have some clues about what he is able to do, but we are not quite certain why he produced such responses as the reversed 31,73,76,39, etc. We want more information. So, we may work with Bill for a little while to see what is happening.

SHOW TRANSPARENCY 82

In addition to looking at errors in his answers, it was necessary to observe Bill in the learning situation. In order to determine how he produced the various responses, it was necessary to see him actually working the math problems. Using this group of the original problems, let's look at the strategies used by Bill to produce what he did.

In general, Bill tries to add all problems in his head. He understands the right to left progression of addition and has no difficulty with the concept of regrouping. His problem is with addition facts not operations. In two row, two column addition, his basic strategy is always to take the largest addend first and add the second one to it regardless of its top or bottom position. Therefore, commutative properties are not a problem.

Other observations showed that he sped through the first row of problems without any difficulty. However, on the first problem in the second row, 36 plus 5, he showed some hesitation, followed by a two-minute delay in completing the next problem which was 8 plus 39. He worked the third problem quickly and also the fourth; but in the fourth problem, the answer was put down incorrectly (13 with the 3 reversed). On the third row, he missed three of the four problems.

With this additional information, do you feel you understand his production processes enough to proceed now with the actual selection of task items? We hope you said, "Probably not" and are asking yourself why it took two minutes to complete one problem. Unable to figure out why ourselves, we used the next product analysis technique and asked him, "Bill, your answer to 8 plus 39 is correct, but could you tell us how you did it?" He replied that he "took five." In other words, he couldn't add eight more units in his head to the existing nine in the ones column. Finally, it dawned on him that he could take 9 plus (5 + 3) and get 17, carry his one, and complete the problem. And what about 26 plus 7 which he recorded as equalling E1? You may be misled by the reversed three and think that he not only reversed the three but also the answer since you know that 6 plus 7 equals 13. *But*, hold on, there is another, this time correct, solution to why he responded as he did. The answer is found in another two problems which he also missed—27 plus 48, which Bill has equalling 73, and 39 plus 39, which he says equal 76. Here again, however, the answer was not apparent until Bill was asked how he achieved the answers he did. He said that seven plus seven equalled twelve. Now look at those two problems again.

PAUSE BRIEFLY, AND IF NECESSARY EXPLAIN HOW BILL USED THE CORRECT OPERATION WITH THE FAULTY FACT.

Once it was determined how Bill had arrived at his various answers, it was possible to begin remedial planning. But before the principles used in the instructional delivery model could be applied, there was still the problem of where to begin the instructional sequence. Should it start at a point where the boy would experience a high level of success, and then gradually increase in difficulty? Bill has already achieved an 83% score without any special help. As important as success is, progress is basically made via new experiences which challenge the learner. Therefore, the instructional sequence should only represent the area of challenge—the area of the unsure and the unknown. Of course, that might not be true in another case, where failure was the usual result of a student's work.

What sequence of challenge would you use with Bill? Where does this problem with addition facts begin, and what is the range of addition facts that needs to be developed? Looking back, do you remember that he first began to show some hesitations when both of the addends were five or greater? He obviously did not know six plus six, nor seven plus seven, etc. From interpreting his behavior, we would say that the sums which created difficulty for Bill were from 10 to 18 where both addends were five or greater. And even though he demonstrated some facility with the use of fives, the five factors should be strengthened.

How long it will take Bill to master the remaining facts which fall within the parameters that were just defined is unknown. This will depend on establishing his acquisition rate and then maintaining an amount of challenge which complements that rate. To begin this process, the evaluator or teacher must make an educated guess about the actual number of challenging items within the instructional sequence that she wants to introduce during initial instruction. Once these are decided, the teacher endeavors to keep the two types of problems within a ratio which favors success—70 to 85 percent known facts and 15 to 30 percent challenge.

It would not serve a useful purpose to include mat problems which span Bill's entire range of need. This woul be self-defeating and similar to the insensitive nature of commercial assignments. What needs to be done is to control systematically the item selection based upon the sequential needs of the child. In Bill's case, it was decided to restrict the number of challenging facts to those summing to 14 or less. This gave the following math fact combinations:

SHOW TRANSPARENCY 83

Of these facts, remember only four are considered unknown—6 + 6, 6 + 7, 6 + 8, and 7 + 7. All of the other facts use a 5 as one of the addends, and therefore at the very most could only be considered hesitant responses. This includes even 5 + 5. In all probability Bill knows that math fact; but since it wasn't on the original worksheet, it should be checked. Because he takes the largest number first, the alternating positions of the number, for example, 5 + 6 and 6 + 5, were not included, since he was already using the principle of commutative properties.

REFER TO THE BOTTOM PORTION OF TRANSPARENCY 83

We are now ready to use these facts in developing a concluding task. If time permits, the material can be individually prepared by the teacher or evaluator to reflect both the desired instructional sequence and the ratio o difficulty. The task consists of the problems as the studen would see them. What you see in the lower portion of the transparency is the teacher prepared task that was presented to Bill.

In this task, each new fact in the desired sequence was circled. All other facts were known. The ratio of knowns to challenging items was 72 percent to 28 percent. The circles were provided for two reasons: (1) to focus the attention of the student on specific problems, and (2) to direct the teacher to the problems of concern. Have you ever stopped to consider why a teacher needs to correct every problem, especially when 70 percent of them are known? What an inefficient use of valuable instructional time!

SHOW TRANSPARENCY 84

Another time saving device is for the teacher to modify the student's existing work in preference to constructing it him/herself. This type of curriculum modification permits the teacher to incorporate the instructional sequence of the student; the one drawback to this approach, however, is that not all of the pertinent facts may be included. Notice the types of omitted facts, and also locate those facts which were missing from the modified work given to Bill.

When drilling on math facts, don't just introduce unknowns. As mentioned before, you will have better success if you sandwich the presentation of new facts in among known facts. The actual number of facts to be used in drill really depends upon the student's rate of acquisition. For example, i a student fails to learn even one new fact per day, it would b futile to attempt to teach him several during one sitting. For this type of student, you would probably try to introduce one to two new facts along with four or five which are known. The number would naturally be increased for the more capable student; but even then, you would want to limit the combination of challenging and known items to around 20 to 25 responses.

Once the student has learned a series of facts it may be beneficial to provide drill to improve his rate of fluency. In accomplishing this, a precision teaching approach is helpful. A sheet of simple facts is presented to the student to be worked in a brief time. If you are not familiar with this type of timed procedure, we would like to illustrate it, using Bill once again as an example. Remember that he showed some hesitation on problems with addends of five. Short, timed drill work such as these which I will put on the chalk board (or transparency, if using a grease pencil) would help to speed up his response time. . . .

Write the following addition problems on the chalk board, or on the clear acetate with a grease pencil. You may have decided in advance to place them on the board during the break or you may even have prepared your own transparency in advance.

0	6	5	7	3	9	4	8	6	1
+5	+5	+5	+5	+5	+5	+5	+5	+5	+5
9	3	7	2	0	4	8	1	5	6
+5	+5	+5	+5	+5	+5	+5	+5	+5	+5

After being satisfied that the drill activities have accomplished their purpose, the concluding task is presented to the student. This task encourages the student to use his or her newly obtained facts as well as complete the required math operations. For Bill, this meant presenting a series of two row, two column addition problems whose ones column did not exceed a sum of 14. The correctness and efficiency of his work will provide feedback concerning the appropriateness of the sequencing and drill decisions. Any difficulties observed at this point signal the need for adjustments prior to the next teaching session.

SHOW TRANSPARENCY 85

Periodically, you come across that student who has not been able to master the steps required for a certain mathematical operation. Teachers have tried repeatedly to help him overcome this deficiency by providing an assortment of drill and assigned activities to little avail. Additional repetition does not seem to help but, instead, appears to aggravate the problem. He no longer shows the interest or concentration to master the remaining facts. The teacher is faced with the students' admission that he hates, for example, multiplication.

Occasionally, problems of this sort are also of the teacher's making. A teacher may become so regimented in demanding that a certain level of mastery or speed be achieved in using facts that he or she actually impedes the student's progress throughout the math curriculum. When this happens, it is generally accompanied by student task avoidance and careless errors. Advancing the student to the next operation may rekindle his motivation to learn something new while also bringing his level of work closer to that of his classmates.

Road blocks of this type can be dealt with by reassessing the instructional situation and by looking for ways to complement the child's learning. There are ways of mutually accomplishing such a purpose. Since math is cumulative, meaning that the facts and concepts of one operation are used in preparation for the next, it is possible to move to the next operation and to use that stage in helping to remediate deficiency within a preceding operation. To accomplish this, care must be taken to ensure that the student understands the concepts and procedural steps of the new operation. But careful consideration must also be given to the selection of specific problems to ensure that the student functions successfully within the new task while gradually acquiring the deficient facts from a former operation.

SHOW TRANSPARENCY 86

What you see on the transparency you will also find on your worksheet page W-53. In this case, a student named Larry has the kind of problem we have been referring to. His progress is blocked, because he has not been able to master his multiplication facts. When asked if he would like to proceed to division, there was an immediate positive response. When some very simple division problems were presented, it was obvious that Larry understood the division process, and that it was not necessary to teach him the procedural steps. However, he would not be successful in division for very long because of the number of deficient multiplication facts.

Now look at the worksheet (W-53); read and follow the instructions at the top of the page. You will have about 10 minutes to complete the worksheet and then we will discuss the case further.

Allow about 10 minutes for the participants to complete the worksheet, then debrief with the following script. . .

In this assignment, you were asked to examine the data from Larry's responses, identify his deficient facts, and convert these facts into their division complements; for example, 3 times 6 complements 18 divided by 3. You were asked to decide on a sequence of multiplication facts you wish to teach, and finally, using the instructional ratio concept, you were asked to design a division lesson of 15 to 20 problems containing both the known multiplication facts and the sequence of deficient facts that you will be presenting in division form. Now let's analyze your results.

Spend a short time soliciting responses from the participants as to what responses they came up with on this assignment. Discuss them briefly, and then move on to the next point to be made. . .

SHOW TRANSPARENCY 87

In order for a student to function successfully in math, it is essential that she master the basic operations of addition, subtraction, multiplication, and division. She must understand the basic concepts of each operation and be able to apply the appropriate algorithms. Within the developmental sequence of mathematics, the introduction of an operation is consistently accompanied by the introduction of a series of facts pertinent to the operation. Occasionally, though, the situation arises where the student is able to conceptualize and recall a sufficient number of facts within a process, yet manifests difficulty in mastering the operation. The student either confuses the algorithmic order of the steps in the operation or has an insufficient conceptualization of what is involved.

The mastery of a new operation, or the ability to overcome problems of a previously presented operation, are goals which are distinctively different from the mastery of facts. Facts are conceptually easier to learn, and possess cumulative properties. Operations are conceptually more difficult to acquire because of the procedural steps involved; but once an operation is mastered, it becomes a routine. There isn't a cumulative aspect to an operation as there is with a series of facts. What this means for teaching and learning is that the student must not only learn the operation at its various stages, but also accumulate the host of facts which are products of the operation. The bulk of instructional time goes into teaching the facts. When the emphasis is in this direction, the ratio system we have discussed works quite well, because we are working with quantities. If the problem is not an insufficient supply of facts but an operational breakdown, then the ratio concept is of little use. At the point of breakdown, you are dealing basically with a quantity of one—the one operational stage which poses the difficulty. When there is an operational breakdown, you have to focus your attention at that point, preparing material which will facilitate the mastery of that stage of the operation. As the student begins to catch on to the process, the ratio system is reintroduced, so that progress will be diagonal across both operations and facts.

SHOW TRANSPARENCY 88

Measurement of a student's progress in mathematics, as in reading, is multifaceted and multipurpose. In mathematics, again, we look at performance rate from two perspectives: first, the rate of acquisition, or the ability to assimilate new information; and second, the proficiency or fluency in recall and use of the learned facts and concepts. A third factor in evaluating mathematics performance, and one which corresponds to comprehension in reading, refers to the ability to understand and apply quantitative concepts to solve mathematical problems.

Let's first discuss *rate of acquisition*. We frequently find teachers charting data on the student's proficiency and rate of recall on sets of math facts. These charts generally provide a cumulative profile of the student's progress over a period of time. This type of charting, however, is more likely to reflect the pace at which the teacher is teaching than the pace at which the child can progress. The pace of the child is called his rate of acquisition and refers to the amount of new information he can learn and retain during each training episode. To familiarize yourself more fully with this concept in mathematics, take the time to examine Daryn's performance, and calculate his rate of acquisition.

SHOW TRANSPARENCIES 89 & 90

You will also find this case shown in your workbook pages W-55 and W-56. Take a few seconds and calculate Daryn's rate of acquisition.

Pause for perhaps one-half minute or so to allow the computation of the rate of acquisition

What did you calculate as Daryn's rate of acquisition? He was capable of learning *one* new item per lesson, right? That was his current rate of acquisition.

Naturally, we would like to see an increase in his acquisition rate and to provide him with more challenge. But the amount of challenge should only be increased by one. If he had been picking up three or four new items each time, we might have tried for five or six. We are trying to determine the actual number of new items that we can present to the student and still be relatively sure that they will be mastered. As you can see, this type of measurement isn't going to provide very precise data if used only once; but if used in an informed trial and error approach, it can yield a representative value of the child's ability to learn and retain new facts and concepts.

Even though the instructional delivery model recommends a challenge ratio in math of 15 to 30 percent, and the ratio tends to self correct for student ability because the number of new items grows geometrically with the amount of known material, there are students who learn more slowly, and their instruction needs to be adjusted accordingly.

Finally, we come to the rate of fluency. Fluency is proficiency or speed in responding to previously learned material. It is a useful measure for the teacher, because it allows him or her to estimate the ease of an assignment and the necessary time allotment. When responses are correct and immediate, little effort or time needs to be expended by the teacher in helping the student complete the assignment. Students who lack fluency require more teacher time and must exert more individual effort. When this happens, it may indicate the need for modification of assignments in order to avoid impending frustration.

The end product of reading instruction is comprehension and communication via the printed word. A similar goal applies to mathematics. Instruction in mathematics should provide tools and concepts that can be used in applied settings.

The application of mathematics needs to be functional. A teacher cannot be satisfied with the development of role skills which a child is unable to associate with or apply to the real world. Comprehension and application of quantitative concepts, like comprehension in reading development, are the logical conclusions of instruction and must be fostered. Proper application after all, is the final and true measure of understanding.

SHOW TRANSPARENCY 91

When you are teaching an operation, you basically have four procedures that you can use—four phases of activity. One is modeling. You model the activity for the student by "walking" him/her through the correct stages of an operation. You show the student what the correct response looks like and the steps involved in achieving that response. Let's consider an example.

SHOW TRANSPARENCY 92
GO OVER THIS TRANSPARENCY STEP BY STEP

First you model, and then you prompt the student. After that you offer practice of the skills or concepts presented, and then you are ready for the student to work independently (fading out the modeling step).

Pause for a few moments to elicit questions or comments from the participants about the four procedures, and then proceed to. . .

SHOW TRANSPARENCY 93

We are now ready to address the last step in the instructional delivery model for mathematics, which is monitoring progress.

School systems and teachers are naturally and rightfully concerned with the progress of their students in mathematics.

Schools routinely administer standardized achievement tests each year to measure student progress and evaluate teaching effectiveness in this subject area. For most school systems and children, normative data are sufficient to measure progress; ut for the curriculum casualty child, more instruction-related and definitive data are needed. Again, the use of curriculum based assessment provides specific information most relevant for instruction and most sensitive to the measurement of student progress.

This completes the curriculum based assessment workshop. We are now ready to do the last "Instant Replay." Are there any questions before we do this?

Pause for questions and comments from the participants. Discuss any points that come up, and then administer the Instant Replay. Allow about ten to fifteen minutes for its completion. Debrief with the participants upon completion of the Instant Replay, ask for any final questions, and close the workshop.

THIS IS THE END OF THE WORKSHOP

TRANSPARENCIES FOR CBA

CURRICULUM CASUALTIES

- scope of the problem

- prevailing approaches

CBA [redacted] REFERRAL FOR EDUCATIONAL/ BEHAVIORAL EVALUATION [redacted] T1a

NAME Rick DATE OF BIRTH 9-3-71

SEX Male SCHOOL * * * elementary

GRADE 3 TEACHER Ms. Lewis

REASON FOR REFERRAL Rick is not performing grade level work in spelling and reading. He is starting to have temper outbursts in class, refusing to work and he wanders around the classroom.

DESCRIBE SPECIFIC EDUCATIONAL/ BEHAVIORAL PROBLEMS: Rick within the last month is having parting episodes, refusing verbally and physically to complete his assignments even in small groups and one to one with the teacher aide. Other students read for him to help him finish his work.

LIST STRATEGIES USED TO ENHANCE STUDENT ACHIEVEMENT AND/OR CLASSROOM BEHAVIOR:

1.) Given him additional time to complete assignments 2.) Praised him when he tries. 3.) Since October he has attended twice a week a "Right to Read" remedial class.

CURRENT EDUCATIONAL FUNCTIONING: Below grade level and his potential is much higher than his present performance in both reading and spelling.

RESULTS OF GENERAL VISION, HEARING, AND MEDICAL SCREENING:

Vision & hearing screening normal.

PLEASE SIGN:

Linda Lewis, REFERRING TEACHER(S)

____

__________, PRINCIPAL

S. Keith, COORDINATOR OF SCREENING COMMITTEE

DATE OF REFERRAL 12-3-79

CBA

WISC-R

RECORD FORM

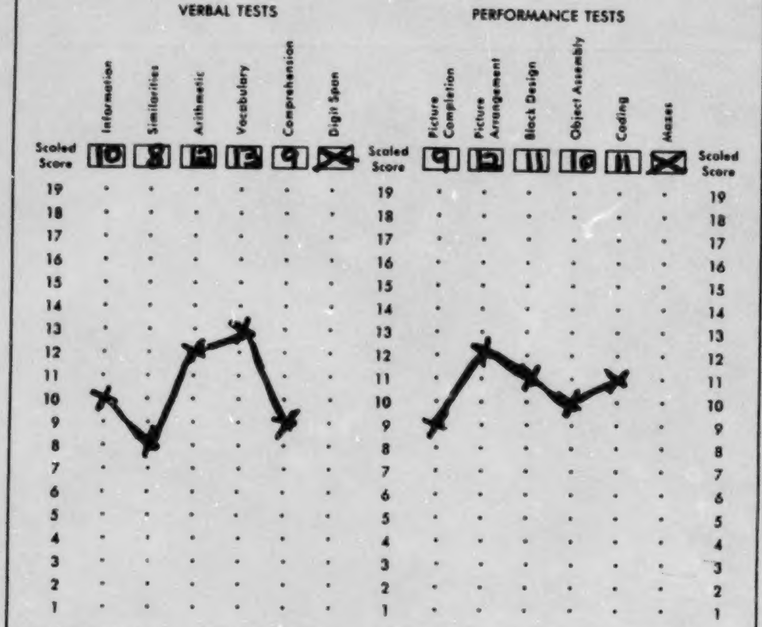
Wechsler Intelligence Scale for Children—Revised

TIB

NAME Rick AGE 8-3 SEX M
ADDRESS see file
PARENT'S NAME Mr. & Mrs. M.
SCHOOL XXX Elementary GRADE 3
PLACE OF TESTING (same) TESTED BY A. Coulter
REFERRED BY Ms. K.

WISC-R PROFILE

Clinicians who wish to draw a profile should first transfer the child's scaled scores to the row of boxes below. Then mark an X on the dot corresponding to the scaled score for each test, and draw a line connecting the X's.*



*See Chapter 4 in the manual for a discussion of the significance of differences between scores on the tests.

NOTES

	Year	Month	Day
Date Tested	79	12	10
Date of Birth	71	9	3
Age	8	3	7

	Raw Score	Scaled Score
VERBAL TESTS		
Information	10	10
Similarities	8	8
Arithmetic	14	12
Vocabulary	27	13
Comprehension	11	9
(Digit Span)	(—)	(—)
Verbal Score		52
PERFORMANCE TESTS		
Picture Completion	14	9
Picture Arrangement	25	12
Block Design	18	11
Object Assembly	16	10
Coding	32	11
(Mazes)	(—)	(—)
Performance Score		53

	Scaled Score	IQ
Verbal Score	52	102
Performance Score	53	104
Full Scale Score	105	102

*Prorated from 4 tests, if necessary.

WIDE RANGE ACHIEVEMENT TEST

Reading, Spelling, Arithmetic from Pre-School to College
By J. F. Jastak, S. W. Bijou, S. R. Jastak

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Guidance Associates
of Delaware, Inc.
1526 Gilpin Avenue
Wilmington, Delaware

Printed in U.S.A.
1937, 1946, 1963
Revised Edition
1965

Name RICK Birthdate 9-3-71 [✓ M] F. Chron. Age 8-3
School XXX Elementary Grade 3 Reading Score Grade 1.5 Stand-Sc. 69 %ile 2
Referred by Ms. K. Spelling Score Grade 2.4 Stand-Sc. 83 %ile 13
Date Examiner A. Coulter Arithmetic Score Grade 3.1 Stand-Sc. 98 %ile 45

CBA T 1-C

RICK
8.3 YEARS OLD
IN THIRD GRADE, RECOMMENDED FOR DIAGOSTIC EVALUATION

CURRICULUM
ASSESSMENT

**
THE RED TRUCK

**
"THERE IS A FOREST FAR UP IN THE MOUNTAINS. IT IS
* ** ** * ** **
CALLED BIG PINES. THERE IS A LITTLE STORE THERE.
** ** * ** * *
THERE IS A RANGER STATION THERE TOO. IT IS CALLED
** ** *
BIG PINES RANGER STATION.

** UNKNOWNS
* HESITANTS

KNOWNS
- A
- BIG
- FAR
- FOREST
- IN
- IS
- IT
- RED
- THE
- UP

/

CHALLENGES
- CALLED
- LITTLE
- MOUNTAINS
- PINES
- RANGER
- STATION
- STORE
- THERE
- TOO
- TRUCK

(FIRST PARAGRAPH OF JIM FOREST AND THE BANDITS, 1967).

THE ASSESSMENT CYCLE—
AREAS OF INPUT:

—SCREENING

—IDENTIFICATION

—INSTRUCTION

—MEASUREMENT OF PROGRESS

T3

The Instructional Match—

TASK DIFFICULTY

vs.

STUDENT PERFORMANCE

CBA/T3

Factors Effecting the Match

Professional Bias

Learning Environment

Levels of performance

CBA

PROFESSIONAL BIAS

IN ESSENCE, ONE LOOKS FOR, FINDS, AND TREATS WHAT ONE EXPECTS AND BELIEVES EXISTS

THE LEARNING ENVIRONMENT

THE ABILITY TO ACCURATELY RECOGNIZE AND FOLLOW THROUGH ON BOTH TEACHER'S VERBAL AND NONVERBAL COMMUNICATION WILL IN LARGE MEASURE DETERMINE THE SUCCESS THE STUDENT HAS IN THE CLASSROOM

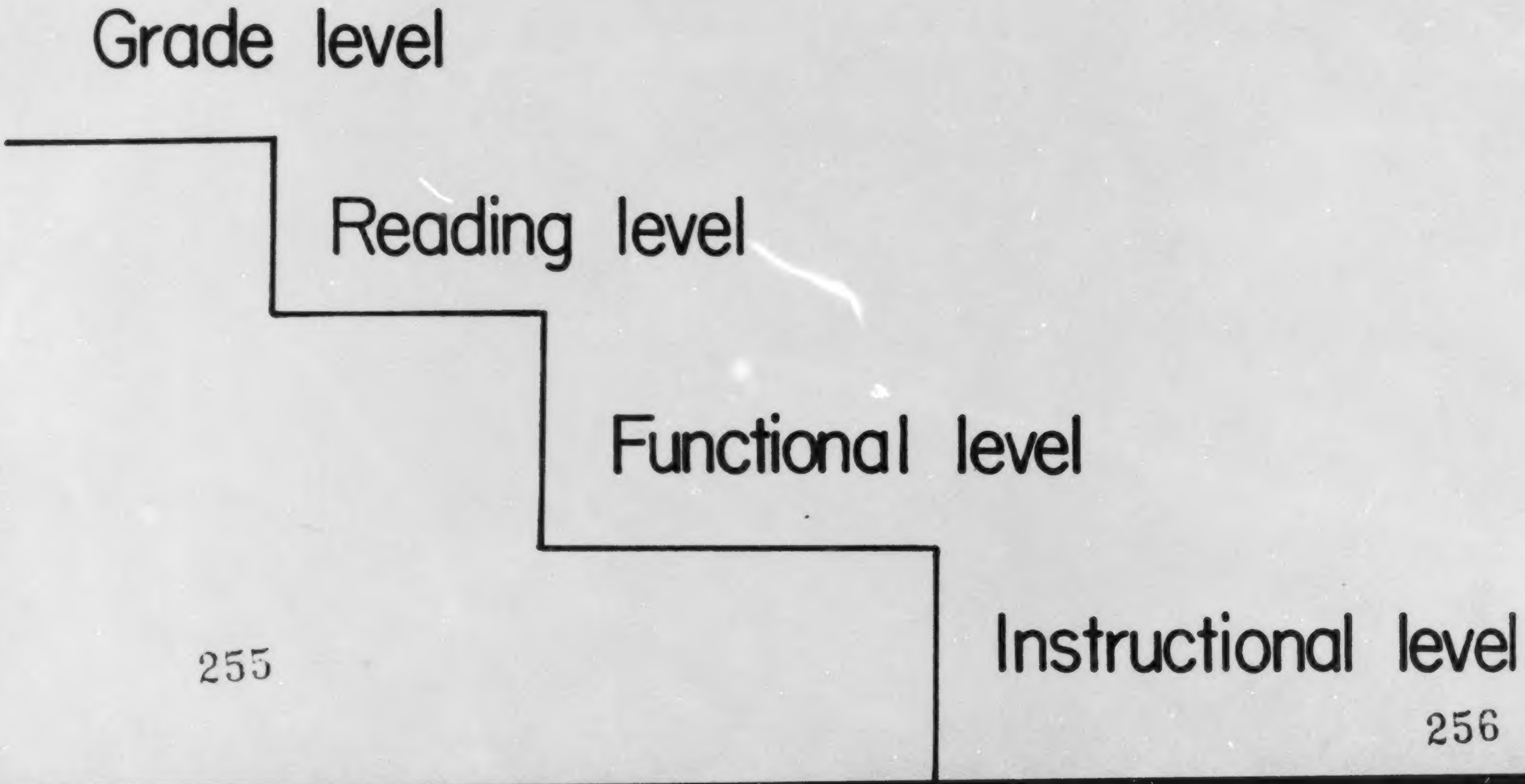
LEVELS OF PERFORMANCE

We are compelled to feel that as of now the entire concept of "LEVELS" is more a way of defining where a child is than of pinpointing specific instructional needs

CBA

The often confusing concept of "Level" of Performance

CBA/T3d



Grade level

Reading level

Functional level

Instructional level

T3(D)

Curriculum Based Assessment

"A procedure for determining the instructional needs of a student based upon the student's ongoing performance within existing course content."

BASIC ASSUMPTIONS

—Knowledge of scope & sequence

—Perceptual & processing tasks are not prerequisites to academic tasks

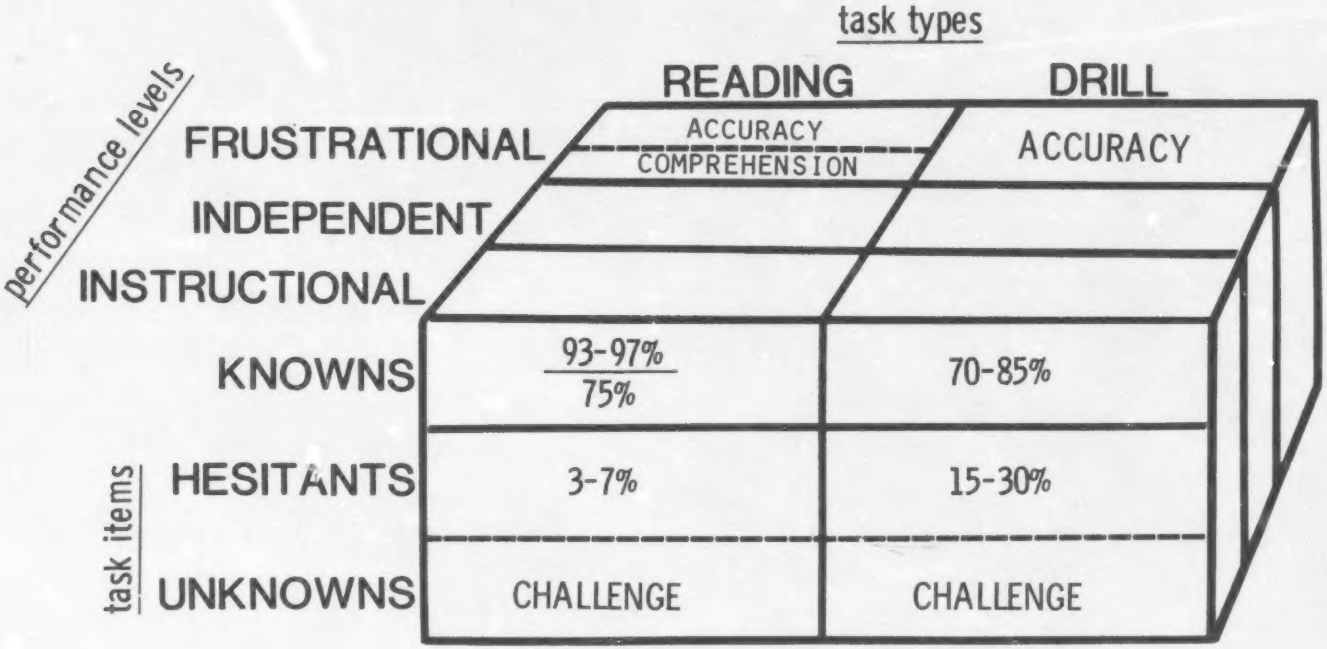
CBA/T5

—Materials can be assets or deterrents to learning

—Assessment is to be accurate, continuous, and lead to instructional improvement

—Assessment activities should be directly related to teaching activities

INSTRUCTIONAL DELIVERY MODEL


task types
performance levels
task items

	READING	DRILL
FRUSTRATIONAL	ACCURACY COMPREHENSION	ACCURACY
INDEPENDENT		
INSTRUCTIONAL		
KNOWNS	93-97% 75%	70-85%
HESITANTS	3-7%	15-30%
UNKNOWNS	CHALLENGE	CHALLENGE

(E.E. GICKLING, 1975)

BASIC RULES

1. Keep percentage of knowns high
2. Confine new material to the margins of challenge
3. Items of undetermined status are treated as unknowns
4. Prepare content before drill
5. Present drill before content
6. All tasks are carried to their logical conclusion

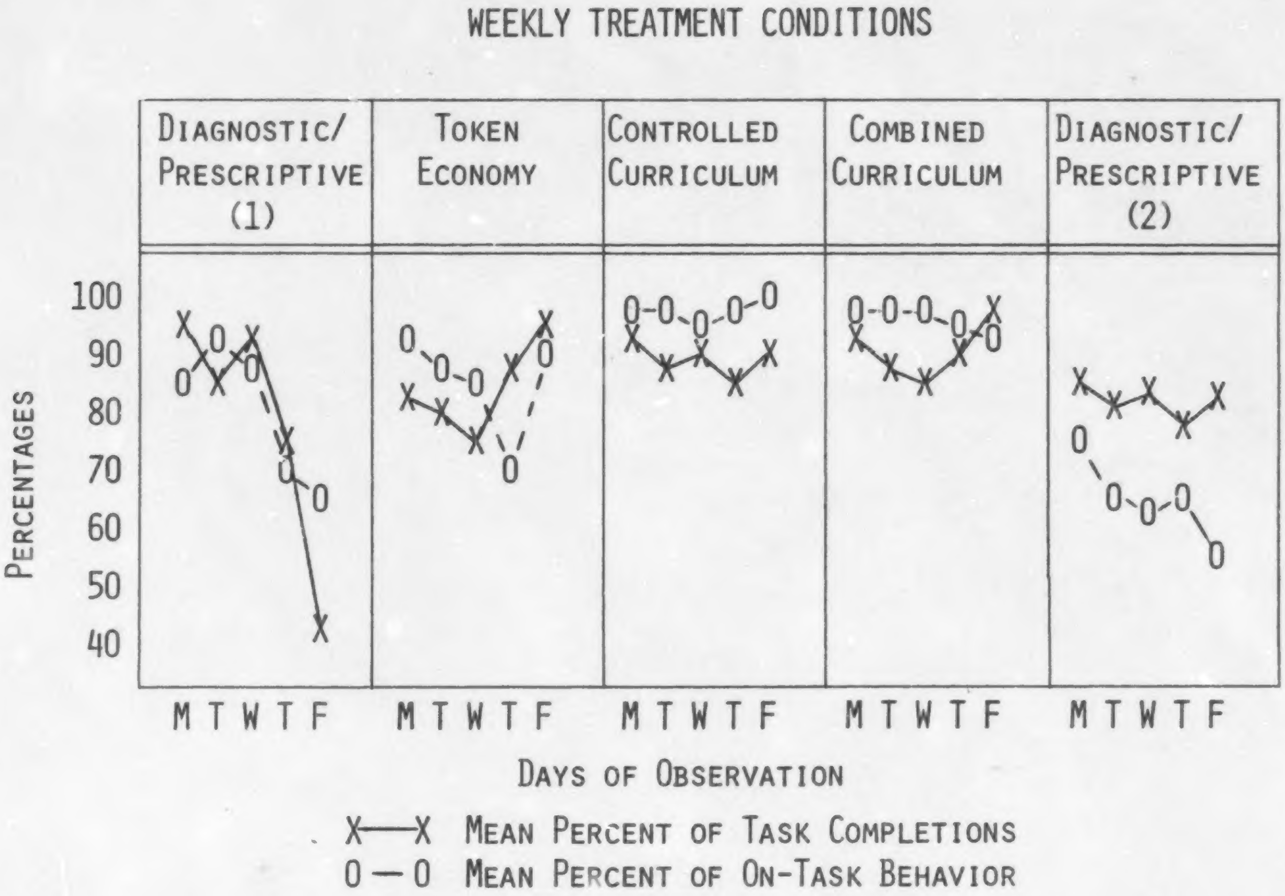


FIG. 1. MEAN PERCENTAGES OF ON-TASK AND TASK COMPLETION BEHAVIORS FOR FIVE LEARNING DISABLED CHILDREN FOR ONE HOUR PER DAY ACROSS FIVE TREATMENT CONDITIONS.

CBA

CBA/T8

T8

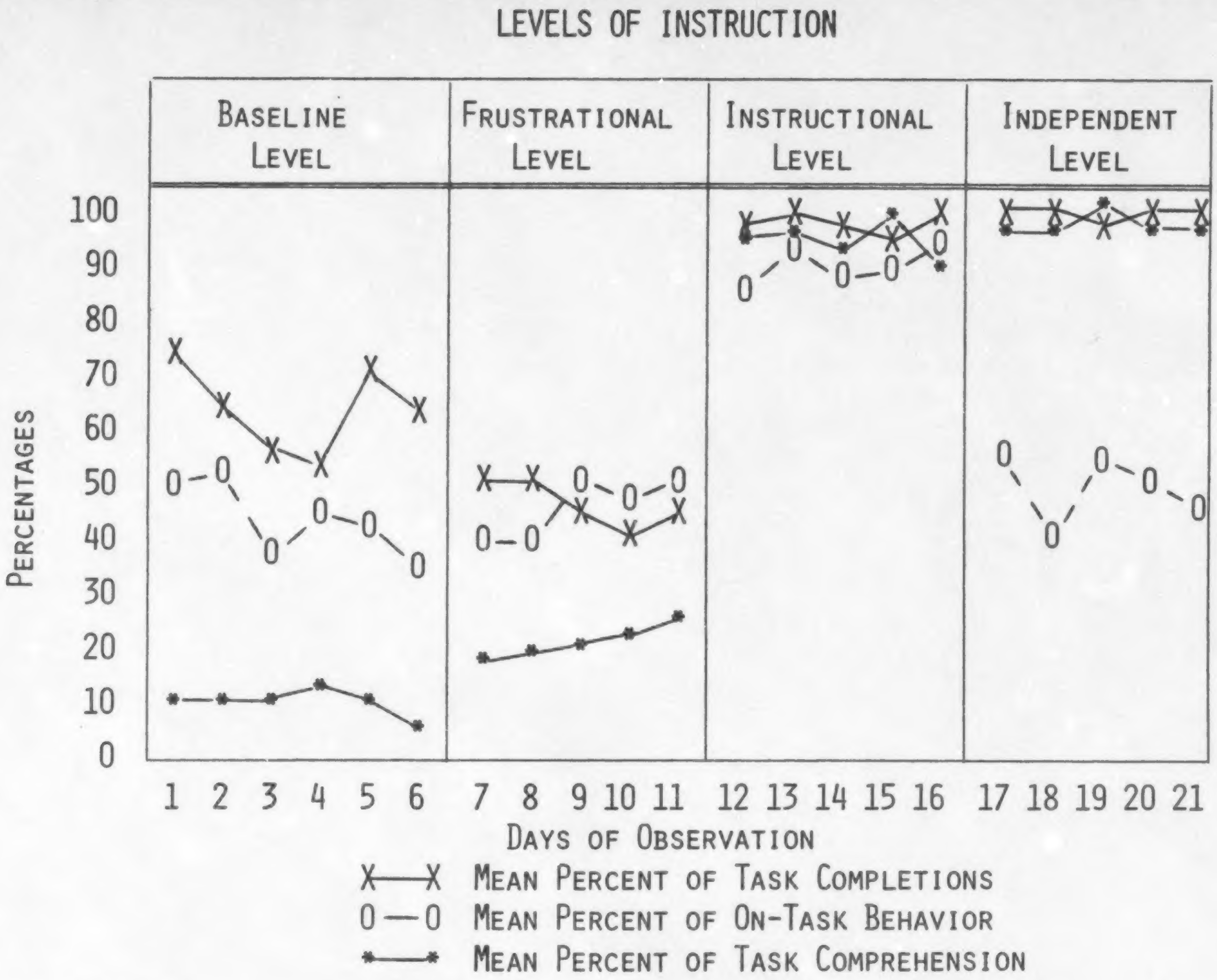


FIG. 1. MEAN PERCENTAGES OF TASK COMPLETION, TASK COMPREHENSION, AND ON-TASK BEHAVIORS FOR EIGHT 1ST AND 2ND GRADERS ACROSS BASELINE, FRUSTRATIONAL, INSTRUCTIONAL, AND INDEPENDENT LEVELS OF INSTRUCTION.

A Basic Learning Principle

$$S^D - R$$

ASSUMPTIONS

APPLIED

to

READING

KNOWLEDGE OF READING SCOPE
&
SEQUENCE

- Readiness skills
- Word recognition skills
- Passage reading
- Reading comprehension
- Reading fluency
- Reading and study skills in content areas

CBA

CBA/T13

PERCEPTUAL & PROCESSING TASKS

ARE NOT

PREREQUISITES to READING TASKS

T13

CBA

CBA/T14

Materials can be

Assets or Deterrents

to Reading

T14

CBA

ASSESSMENT is to be——
ACCURATE, CONTINUOUS, and LEAD
to INSTRUCTIONAL IMPROVEMENT

CBA/T15

Student's strengths and weaknesses

Testing efficiency

T15

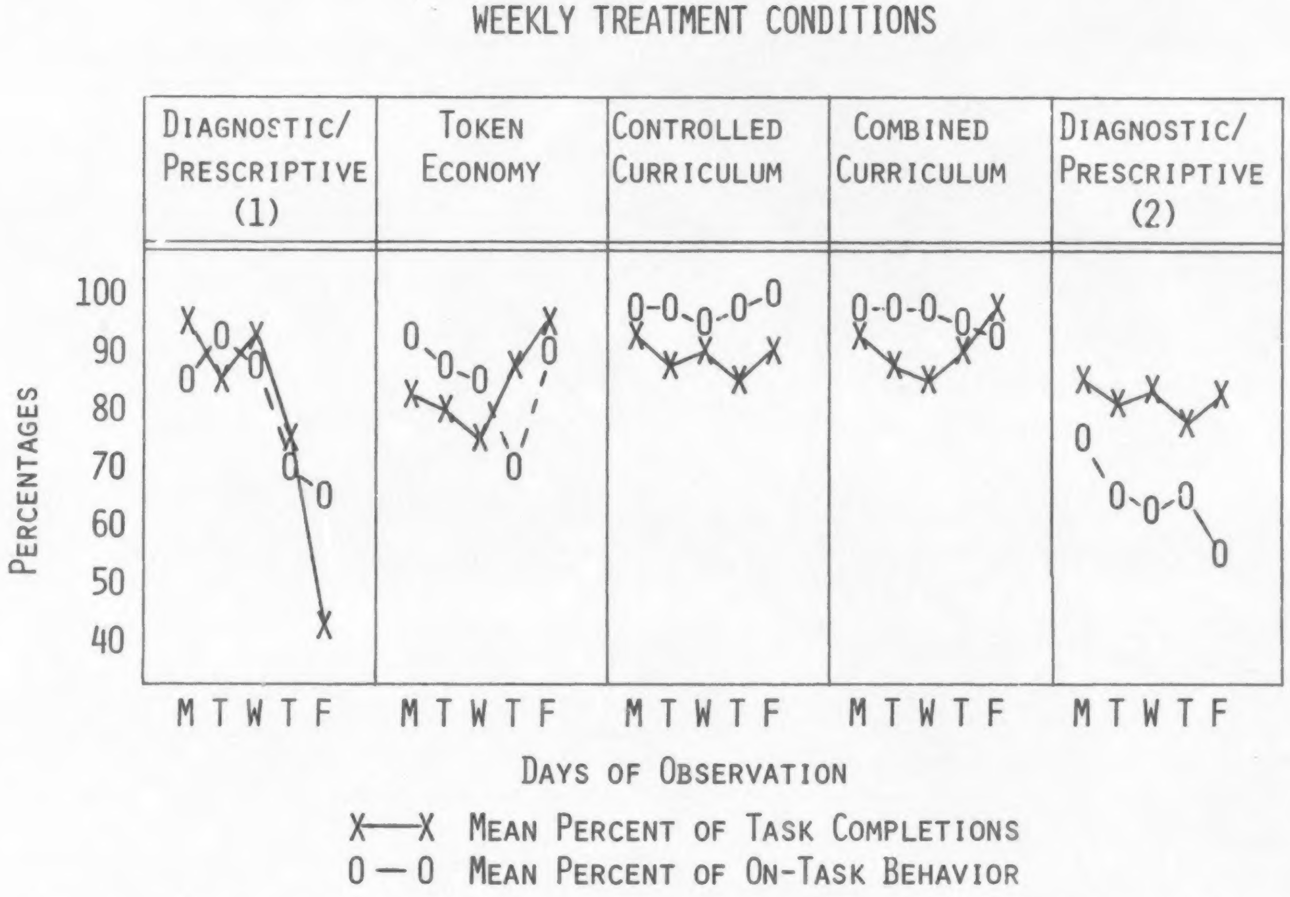
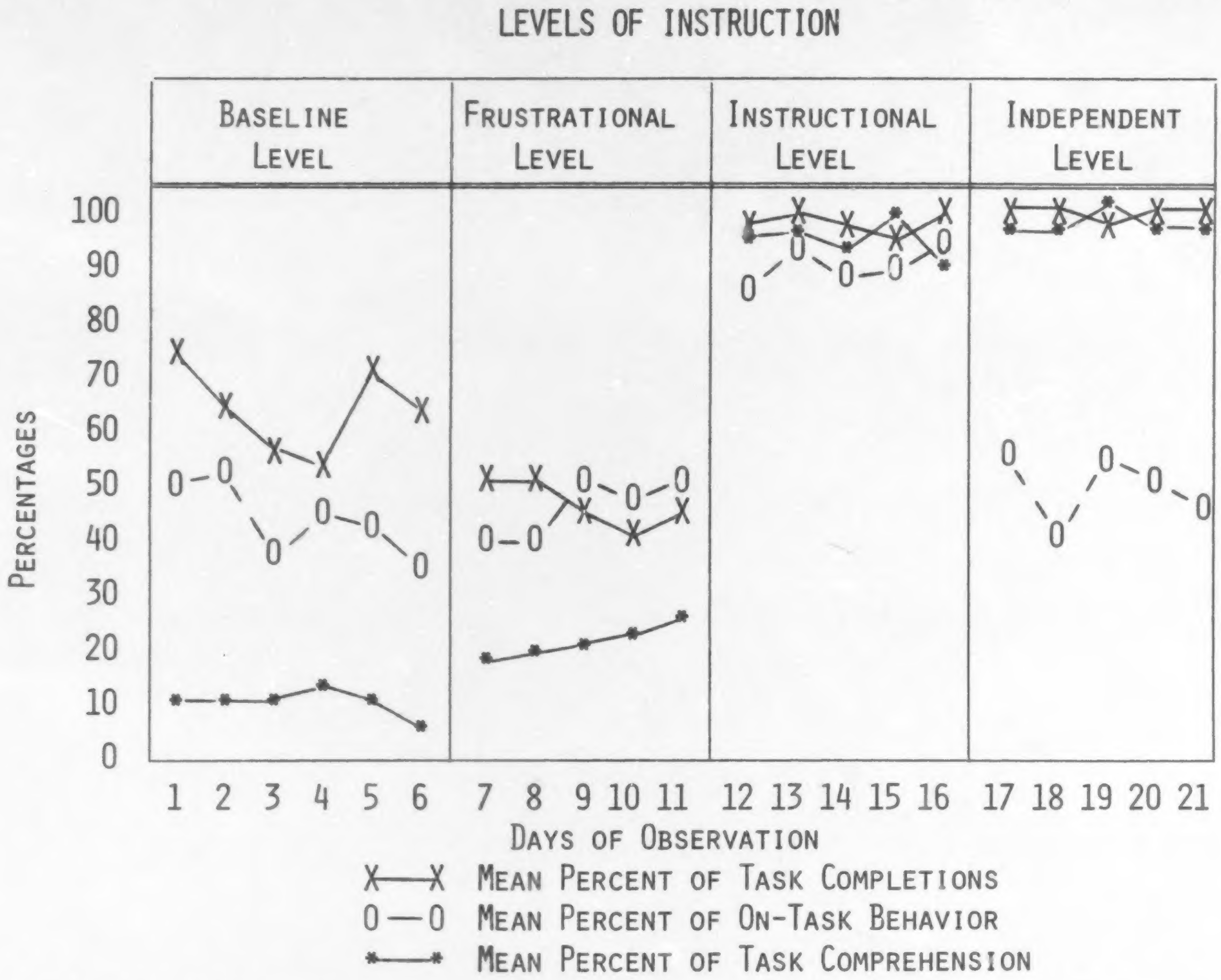


FIG. 1. MEAN PERCENTAGES OF ON-TASK AND TASK COMPLETION BEHAVIORS FOR FIVE LEARNING DISABLED CHILDREN FOR ONE HOUR PER DAY ACROSS FIVE TREATMENT CONDITIONS.

T9



CBA/T9

FIG. 1. MEAN PERCENTAGES OF TASK COMPLETION, TASK COMPREHENSION, AND ON-TASK BEHAVIORS FOR EIGHT 1ST AND 2ND GRADERS ACROSS BASELINE, FRUSTRATIONAL, INSTRUCTIONAL, AND INDEPENDENT LEVELS OF INSTRUCTION.

CBA

A Basic Learning Principle

S^D-R

CBA

ASSUMPTIONS APPLIED to READING

CBA/T11

T11

KNOWLEDGE OF READING SCOPE

&

SEQUENCE

CBA

CBA/T12

________Readiness skills

________Word recognition skills

________Passage reading

________Reading comprehension

________Reading fluency

________Reading and study skills in content areas

T12

CBA

CBA/T13

PERCEPTUAL & PROCESSING TASKS

ARE NOT

PREREQUISITES to READING TASKS

T13

CBA

CBA/T14

Materials can be

Assets or Deterrents

to Reading

T14

ASSESSMENT is to be——

ACCURATE, CONTINUOUS, and LEAD to INSTRUCTIONAL IMPROVEMENT

Student's strengths and weaknesses

Testing efficiency

CBA

CBA/T16

ASSESSMENT ACTIVITIES

should be

DIRECTLY RELATED

to

TEACHING ACTIVITIES

T16

CONVERTIBLE DATA

H
pest was
IT WAS PET DAY AT THE FAIR. THE CHILDREN WERE
Looking Palace
WAITING FOR THE PARADE OF ANIMALS TO BEGIN.
The Tr H That
THEY HAD TRAINED THEIR PETS TO DO MANY DIFFERENT
H we who got
TRICKS. AMONG THEM WAS A TALL BOY WHOSE GOAT
many H H a H
MADE TROUBLE FOR HIM. IT KICKED AND TRIED HARD
away with had best H at
TO BREAK AWAY. WHEN IT HEARD THE BAND IT BE-
in H H this H
CAME QUIET. DURING THE PARADE IT DANCED SO WELL
would H
THAT IT WON A PRIZE.

TYPES OF ERROR	NUMBER
AIDS	11
MISPRONUNCIATIONS	
OMISSIONS	3
INSERTIONS	1
SUBSTITUTIONS	18
REPETITIONS	10
INVERSIONS	

TOTAL ERRORS 43

CBA/T17

TIME 101 SECONDS

QUESTIONS:

+	1.	WHAT DAY WAS IT AT THE FAIR?	animal day
+	2.	WHAT HAD THE CHILDREN TRAINED THEIR PETS TO DO?	tricks
–	3.	WHAT ANIMAL MADE TROUBLE FOR ONE BOY?	dk
–	4.	WHAT DID THE GOAT DO THAT WON A PRIZE?	dk

T17

COMFORTABLE PERFORMANCE

SOME TEACHERS DO NOT SEEM TO REALIZE HOW FEW UNKNOWN WORDS IT TAKES TO MAKE A SELECTION DIFFICULT FOR A CHILD AND, WITH THE BEST OF INTENTIONS, KEEP MANY CHILDREN STRUGGLING WITH MATERIAL THAT IS UNSUITABLY HARD FOR THEM.

(HARRIS, THE READING TEACHER, 1979)

COMPLEMENTING TASKS

"John was in the first grade when I met him. His speech was characterized by a noticable tongue protrusion, lisps, and a weak r. His grammar was characterized by such statements as "her ain't dere." He lacked skill in rhyming and in sound-blending. He was weak in most auditory skills. His strengths consisted of an adequate visual channel, good handwriting skills, and good ability in numbers. You might be curious about his reading program.

In the classroom John was receiving instruction in the following: A phonetic reading program in which the short vowels were introduced before the consonants; an additional and independent phonics program unrelated to the reading program; a spelling program that was phonetically based but which was unrelated to either the reading or the additional phonics program; and he was expected to watch the Electric Company program on television every noon while eating his lunch.

John went to a remedial reading teacher for one-half hour each day. She had been carefully taught by her university never to use the same material in the remedial program that is used in the child's classroom. So she was instructing him in still another phonetically based reading program, in this one, the consonants were introduced before the vowels.

Because John was having so much difficulty learning his sounds, he was also sent to the Title I teacher for one-half hour each day for individual instruction in Phonics. She used a structured system in which all of the voiceless consonants were taught first, then the voiced or noisy consonants, next the singing consonants and, finally, the vowels.

How well could John read by April of his first grade year? He was unable to read one word." (Wood, 1976, pp. 129-130).

REBECCA'S LANGUAGE ARTS PROGRAM - READING

* *

A WISE IDEA

* * *

ANN AND YUON STOOD ON THE SEASHORE AND WATCHED THE RED AND

* H * *

YELLOW SAILS OF THE FISHING BOATS GROW SMALLER AS THE BOATS

* *

SAILED FARTHER AND FARTHER AWAY.

* * * *

EVERY EVENING THEY STOOD HERE TOGETHER. EVERY EVENING A

* * *

DREAMY LOOK CAME INTO YUON'S EYES AS HE FOLLOWED THE SAILS.

* *

ANN KNEW WHAT HE WAS THINKING ABOUT.

(IF I WERE GOING, ROW, PETERSON & COMPANY, 1971, P. 152)

* 19 UNKNOWNS

H 1 HESITANT

- Writing

Here is a story to copy. Write an ending for the last sentence. Make a picture for your story.

*Tip is a baby *elephant. He lives in the zoo. Many children come to see him. The children like to Km to the zee.

Write these sentences. In the place of the blank, write the name of the pet.

1. I *call my pet *turtle tum.
2. Can you hear dog bark?
3. The name of my *hamster is frankie.

Tip is a buby elephant. He live
in the zoo. Mun children come
to see him. the children like to
come to the zee.

* 5 Unknowns

(Language for Daily Use, Grade 2, p. 27)

- SPELLING

BOAT	bock
COAT	cat
FLOAT	Flut
SOAP	Sopt
LOW	lo
SLOW	sloly
SNOW	sold
SHOW	sole
YELLOW	yuller
CLOAK	clok
SHADOW	shud
SNOWFLAKES	soldflaas
SOAK	sock
THIS	this
THAT	that
THE	the
SING	Sing
SANG	sug
RING	rag
RANG	rage
THING	

(*SPELL CORRECTLY*, P. 56 & 57)

T23

Using an Instructional Delivery Model for reading

CBA/T23

CBA

"ESTABLISHING INSTRUCTIONAL LEVELS– TEACHER PREPARED MATERIAL"

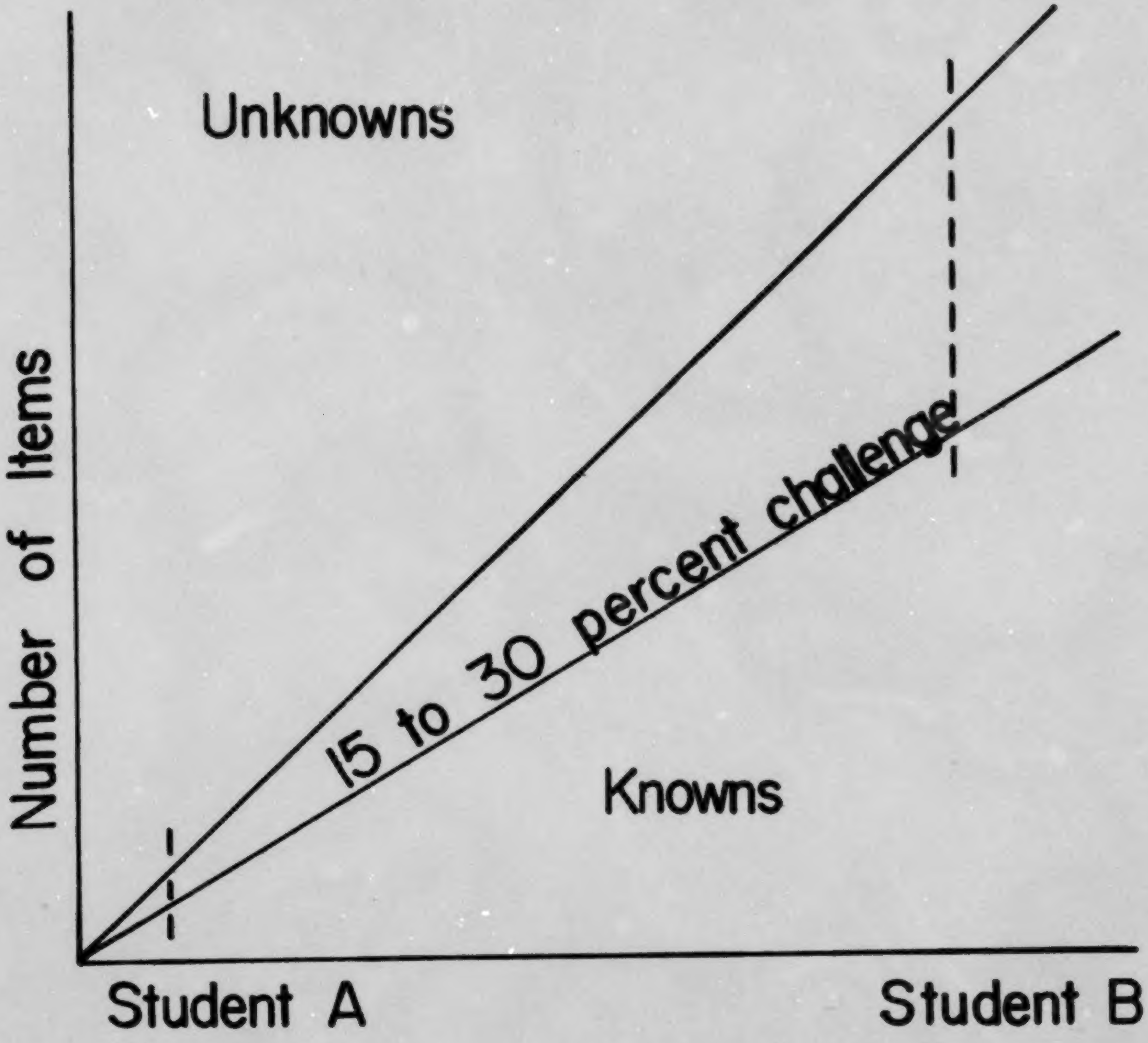
HOLLY
9.2 Years Old
Placed in a Third Grade Self-Contained L.D. Class

Assessment

Known Words	Challenging Words	
	(HESITANTS)	(UNKNOWNS)
ONE, TWO, THREE	FOUR,	(ALL OTHER
RED, GREEN,	BLUE, YELLOW,	WORDS)
PURPLE, ORANGE	BLACK	
A, I, Holly	DIME, NICKEL,	
	PENNY, IN	

Maintaining an Instructional Ratio

T26


Unknowns
15 to 30 percent challenge
Knowns
Number of Items
Student A
Student B

CBA/T26

CBA

TEACHER PREPARED STORY

ONE, TWO, THREE

ONE, TWO, THREE.

ONE RED BOOK.

ONE GREEN BOOK

ONE PURPLE BOOK

ONE, TWO, THREE.

UNKNOWNS

BOOK

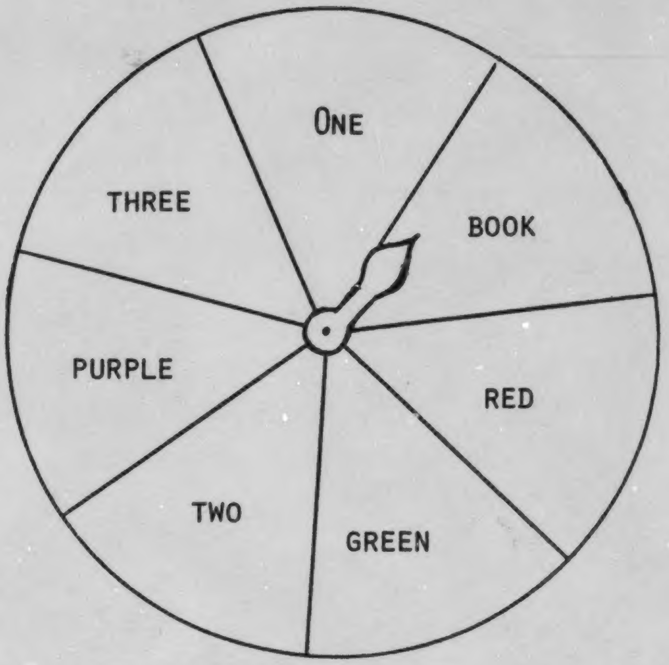
KNOWNS

ONE, TWO,
THREE, RED,
GREEN, PURPLE

COMPREHENSION QUESTIONS:

1. ONE, _____, THREE.
2. _____ RED BOOK.
3. ONE GREEN _______.
4. _____ PURPLE BOOK.

PREPARING DRILL


ONE
BOOK
RED
GREEN
TWO
PURPLE
THREE

PARTICIPANT WORKSHEET 1

JOEY
9.9 Years Old
Placed in a Residential School for the Deaf

Assessment

Knowns:

Sight Words	Letters	
Joey	A	M
A	B	N
IS	C	O
AND	D	P
CAR	E	R
MY	F	S
NAME	G	W
BOAT	H	Y
TRAIN	I	
AIRPLANE	J	
HAS	K	
THE	L	

CURRICULUM
BASED ASSESSMENT -
APPLIED
TO
READING

Preparing Transitional Stories

Internal Consistency

Uses and Abuses

T31

CBA/T31

CBA

TEACHER TRANSITION STORIES

RICK
8.3 Years Old
In Third Grade, Recommended for Diagostic Evaluation

Assessment

```
                            **
                      THE RED TRUCK

                                               **
"THERE IS A FOREST FAR UP IN THE MOUNTAINS.  It IS
  *       **       **         *     **     **
CALLED Big Pines.  There IS A LITTLE STORE THERE.
  **        **      *      **   *            *
There IS A RANGER STATION THERE TOO.  It IS CALLED
     **    **      *
Big Pines Ranger Station.
```

** Unknowns
* Hesitants

Knowns

A
Big
FAR
FOREST
IN
IS
IT
Red
THE
UP

Challenges

CALLED
LITTLE
MOUNTAINS
Pines
RANGER
STATION
STORE
THERE
TOO
Truck

(First paragraph of Jim Forest and the Bandits, 1967).

JIM FOREST AND THE BANDITS

KNOWNS

30 SIGHT WORDS FROM THE LIST OF WORDS IN THE BACK OF THE BOOK

A
ALL
AND
AT
BIG
.
.
.

CHALLENGES

99 HESITANT AND UNKNOWN WORDS

TRANSITIONAL STORY 1

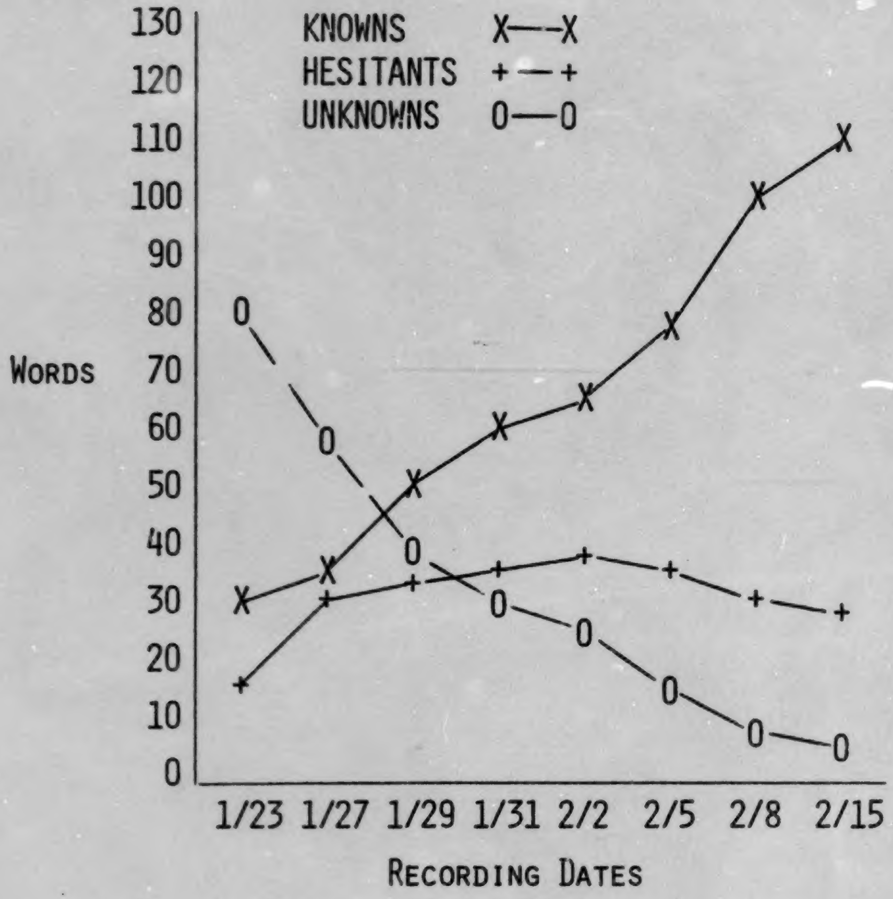
UNCLE DON

Uncle Don took Jim to the ** mountains. Uncle Don is a Forest ** Ranger ** there. He lives ** on ** top the ** mountain. He lives in the trees ** on ** top the ** mountain. He took Jim to look at all the trees in the forest. Jim looked up at all the big trees. He looked far into the forest at all the big trees.

Uncle Don took Jim to the Mountains.
Did Uncle Don live on top the mountain? yes.
He took Jim to see trees.
Is Uncle Don a Forest Ranger? yes.

** Challenges

PROGRESS RECORD



PARTICIPANT WORKSHEET 2

Susan
8 Years Old
In Regular Third Grade

Assessment

AT THE PARK

$\overset{**}{\text{This}}$ $\overset{*}{\text{is}}$ Bill. Bill $\overset{*}{\text{is}}$ $\overset{**}{\text{at}}$ the $\overset{**}{\text{park}}$. $\overset{**}{\text{He}}$ is $\overset{**}{\text{playing}}$ $\overset{**}{\text{at}}$ the $\overset{**}{\text{park}}$. $\overset{**}{\text{He}}$ $\overset{*}{\text{is}}$ $\overset{**}{\text{having}}$ $\overset{**}{\text{fun}}$. Jill is $\overset{**}{\text{at}}$ the $\overset{**}{\text{park}}$ $\overset{**}{\text{too}}$. $\overset{**}{\text{She}}$ is $\overset{**}{\text{playing}}$ and $\overset{**}{\text{having}}$ $\overset{**}{\text{fun}}$. $\overset{**}{\text{Some}}$ ducks are $\overset{**}{\text{at}}$ the $\overset{**}{\text{park}}$. Bill and Jill see the ducks. $\overset{**}{\text{They}}$ $\overset{**}{\text{want}}$ to $\overset{**}{\text{feed}}$ the ducks. $\overset{**}{\text{They}}$ $\overset{**}{\text{have}}$ $\overset{**}{\text{some}}$ bread. They $\overset{*}{\text{feed}}$ the bread to the ducks. The ducks $\overset{**}{\text{eat}}$ the bread.

** Unknowns
* Hesitants

Knowns	Hesitants	Unknowns
AND	IS	AT
ARE		EAT
Bill		FEED
BREAD		FUN
DUCKS		HAVE
Jill		HAVING
SEE		He
THE		PARK
TO		PLAYING
		SHE
		SOME
		They
		THIS
		WANT

Knowns also assessed from Key Word List

A
BIG
BOY
GIRL

CURRICULUM BASED ASSESSMENT
GENERATES

- Its own progress measurement

- Rate of acquisition

- Rate of fluency

- Knowledge and comprehension

MODIFICATION
of
READING RELATED ASSIGNMENTS

T39

Frustrational Tasks

CBA/T39

Curriculum Adaptations

CBA

NAME Ann DATE ______

COMPLETING SENTENCES
Words ending in le

Write the missing word in the blank in each sentence.

1. The horse is in the ______.
2. I am able to go.
3. The king lived in a ______.
4. The ______ flew to his nest.
5. Put the dishes on the table.
6. I broke the bottle.
7. Many people came to the play.
8. The ______ of the basket broke.
9. I cannot thread the ______.
10. Draw a circle on your paper.
11. I saw a ______ in the lake.
12. Many animals live in the ______.
13. I have a ______ pipe.
14. Can you solve the ______?
15. I bought a ______ hat.
16. The baby is asleep in her ______.
17. I will ______ the canoe.
18. I need a ______ box.
19. I will sit in the ______.
20. Light the ______ on the table.
21. The church ______ was damaged by the storm.
22. The baby dropped the ______.

handle
*circle
*little
needle
eagle
candle
turtle
*middle
*table
*people
*bottle
*able
purple
puzzle
bubble
jungle
paddle
castle
cradle
stable
rattle
steeple

Key: * Knowns
○ Unknowns

CBA T41

NAME ANN (Modified Version) DATE ________ ________

COMPLETING SENTENCES

Words ending in le

Write the missing word in the blank in each sentence.

[redacted] ____________________.

2. I am able to go.

[redacted] ____________________.

[redacted] ____________________ [redacted]

5. Put the dishes on the table.

6. I broke the bottle.

7. Many people came to the play.

8. The ________________ of the basket broke.

[redacted] ____ ________________.

10. Draw a circle on your paper.

[redacted] ________________ [redacted]

[redacted] ________________.

[redacted] ____________________ [redacted]

[redacted] ____________________.

[redacted] ________________ [redacted]

[redacted] ________________.

17. I will ________________ the $\overset{\text{BOAT}}{\text{canoe}}$.

18. I need a ________________ box.

19. I will sit in the ____________ __________.

[redacted] ________________ [redacted]

[redacted] ________________ [redacted]
[redacted].

[redacted] ____________________.

23. I USE A ____________ TO MAKE A DRESS.

handle
circle
little
needle
[redacted]
middle
table
people
bottle
able
[redacted]
paddle
[redacted]

Key: boat (WORD substitution)
__ NEW WORDS

CBA/T41

Unmodified Task

"EXPLORATION"

Pretend you are lost. You wandered away from your teacher and class while you were visiting a department store, a zoo, a museum, or a park (choose one). But you have a walkie-talkie to communicate with your teacher. Now, use the most accurate and descriptive words you can think of to describe the objects around you - which will tell the teacher where she can find you.

Sight words recognized

you, your, are, and, a, the, have, see, with, lost, & teacher

-8

Name Calvin **Tip and Mitten**

Choosing the Right Word

✗ 1. With is a good ball,Tip.

The With This

✗ 2. It is find you.

for find dog

✗ 3. Jack will not have here ball.

here this to

✗ 4. Tip will come You the ball.

you dog for

✗ 5. Home a good ball, Tip.

For Home Find

✗ 6. Are you a find dog, Tip?

good find ball

✗ 7. Janet, the is the ball.

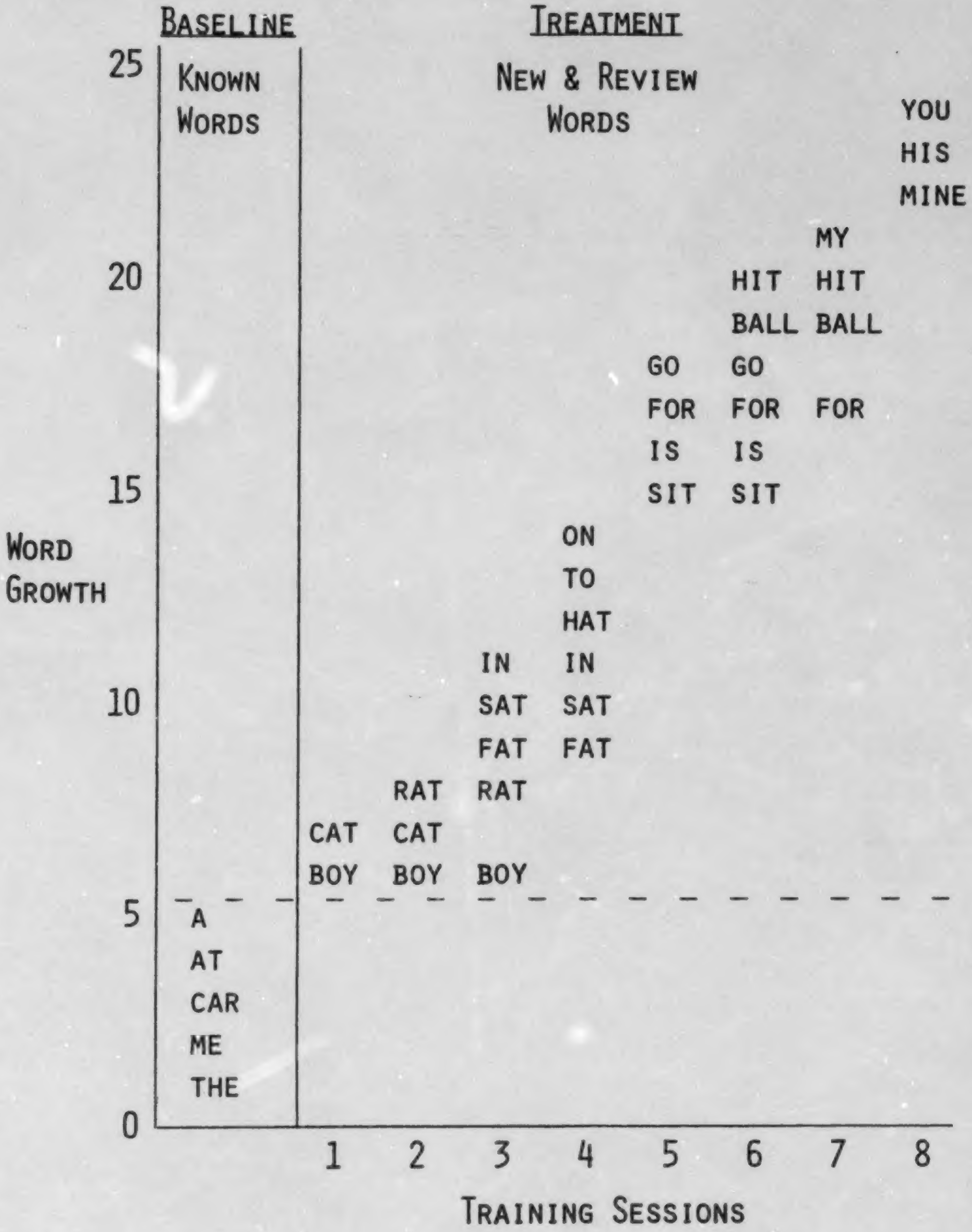
the to this

✗ 8. Jack and Janet home a dog.

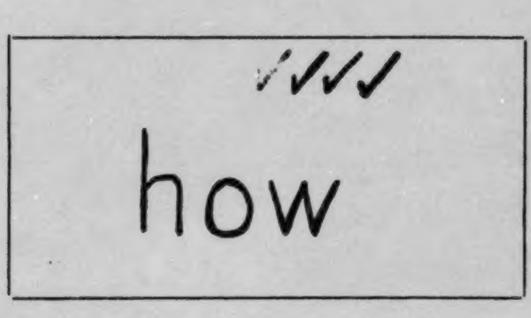
are home have

(Unknown words are circled)

DATA COLLECTION AND RECORDING



CARD FILE



THE RED CHECK INDICATED THAT "HOW" WAS AN UNKNOWN ON FIRST EXPOSURE. ON THE NEXT TWO EXPOSURES, IT WAS A KNOWN AS SHOWN BY TWO BLACK CHECKS. ON THE FOURTH EXPOSURE, THE STUDENT HESITATED, RECEIVING A GREEN CHECK.

APPLICATION OF CURRICULUM BASED ASSESSMENT

"MATHEMATICS"

Knowledge of Mathematics

Scope and Sequence

Readiness
skills

Mathematical
facts and operations

Application
of
quantitative concepts
&
skills

Readiness skills

1. Ability to order objects by attributes such as size or length.
2. One to one correspondence pairing sets of equal size.
3. Rote counting or reciting numerals in sequence to 10.
4. Rational counting or enumerating the numbers in a set.
5. Numeral recognition.
6. Matching number with numeral.

Facts and Operations

1. ADDITION FACTS FOR SINGLE DIGITS TO 18.
2. SUBTRACTION FACTS WITH SUBTRAHENDS TO 18.
3. ALGORITHM FOR TWO DIGIT ADDITION.
4. ALGORITHM FOR TWO DIGIT SUBTRACTION.
5. CONCEPT OF PLACE VALUE AND REGROUPING.
6. ADDITION ALGORITHM WITH REGROUPING.
7. SUBTRACTION ALGORITHM WITH REGROUPING.
8. CONCEPT OF MULTIPLICATION.
9. MULTIPLICATION FACTS.
10. MULTIPLICATION ALGORITHM FOR TWO OR MORE DIGIT MULTIPLIERS.
11. CONCEPT OF DIVISION AS INVERSE OF MULTIPLICATION.
12. ALGORITHM FOR SOLVING DIVISION PROBLEMS.
13. CONCEPT OF FRACTIONAL PARTS.
14. READING AND DESIGNATING FRACTIONAL PARTS.
15. ADDITION OF LIKE FRACTIONS.
16. SUBTRACTION OF LIKE FRACTIONS.
17. FINDING COMMON FACTORS AND PRIME FACTORS.
18. ADDITION AND SUBTRACTION OF UNLIKE FRACTIONS.
19. MULTIPLYING FRACTIONS.
20. DIVISION OF FRACTIONS.
21. CONCEPTS OF DECIMALS.
22. ALGORITHMS FOR OPERATIONS WITH DECIMALS.

Applications

A. PROBLEM SOLVING:
  1. REASONING ABILITY.
  2. UNDERSTANDING WORD PROBLEMS.
  3. DETERMINING RELEVANT INFORMATION.
  4. SET UP EQUATIONS AND CHOOSE ALGORITHMS.
  5. COMPLETE PROBLEMS AND CHECK ANSWERS.

B. FUNCTIONAL MATH SKILLS FOR DAILY LIVING:
  1. TIME.
  2. MONEY.
  3. MEASUREMENT.

CBA

COMMON SOURCES of ERROR—

- Assumptions of knowledge of facts and concepts
- Place value
- Algorithms
- Insufficient facts and random responses

CBA/T51

T51

COMMON SOURCES OF ERROR

1. In Operations

LARRY

$$\begin{array}{r} 7 \\ -3 \\ \hline 4 \end{array} \quad \begin{array}{r} 4 \\ +4 \\ \hline 0 \end{array} \quad \begin{array}{r} 6 \\ -3 \\ \hline 3 \end{array} \quad \begin{array}{r} 4 \\ +2 \\ \hline 2 \end{array}$$

$$\begin{array}{r} 7 \\ +3 \\ \hline 4 \end{array} \quad \begin{array}{r} 6 \\ -2 \\ \hline 4 \end{array} \quad \begin{array}{r} 4 \\ -3 \\ \hline 1 \end{array} \quad \begin{array}{r} 5 \\ +3 \\ \hline 2 \end{array}$$

JOAN

$$\begin{array}{r} 7 \\ +2 \\ \hline 14 \end{array} \quad \begin{array}{r} 3 \\ +4 \\ \hline 12 \end{array} \quad \begin{array}{r} 2 \\ +6 \\ \hline 12 \end{array} \quad \begin{array}{r} 5 \\ +4 \\ \hline 20 \end{array}$$

$$\begin{array}{r} 7 \\ +8 \\ \hline 56 \end{array} \quad \begin{array}{r} 9 \\ +8 \\ \hline 72 \end{array} \quad \begin{array}{r} 6 \\ +5 \\ \hline 30 \end{array} \quad \begin{array}{r} 4 \\ +7 \\ \hline 28 \end{array}$$

Bill

9	11	12	15
+8	+9	+41	+23
17	20	5623	3748

7	35	21	22
+5	+31	+4	+56
12	6846	25	7788

T56

COMMON SOURCES OF ERROR

2. In Algorithms

CBA/T56

CBA

MISUNDERSTANDING OF THE ADDITION PROCESS

Joe
Seventh Grader
14 year old
EMR

3	43	1	51	2	82
+6	+ 6	+4	+ 4	+5	+ 5
9	13	5	10	7	15
57	26	44	23	42	21
+ 2	+ 1	+ 3	+ 4	+ 3	+ 5
14	9	11	9	9	8
4	5	4	3	5	7
+31	+43	+62	+43	+12	+20
8	12	1	10	8	9

Work sheet assessment Gregg

$$\begin{array}{r} 8 \\ \times 2 \\ \hline 16 \end{array} \qquad \begin{array}{r} 3 \\ \times 4 \\ \hline 12 \end{array} \qquad \begin{array}{r} 4 \\ \times 6 \\ \hline 24 \end{array} \qquad \begin{array}{r} 5 \\ \times 3 \\ \hline 15 \end{array}$$

$$\begin{array}{r} {}^{4}14 \\ \times 6 \cdot \\ \hline 102 \end{array} \qquad \begin{array}{r} 73 \\ \times 3 \\ \hline 219 \end{array} \qquad \begin{array}{r} {}^{5}39 \\ \times 5 \\ \hline 204 \end{array} \qquad \begin{array}{r} {}^{6}16 \cdot \\ \times 6 \cdot \\ \hline 123 \end{array}$$

$$\begin{array}{r} {}^{5}15 \\ \times 3 \cdot \\ \hline 81 \end{array} \qquad \begin{array}{r} {}^{5}17 \\ \times 5 \cdot \\ \hline 103 \end{array} \qquad \begin{array}{r} {}^{4}24 \\ \times 6 \cdot \\ \hline 162 \end{array} \qquad \begin{array}{r} {}^{2}28 \\ \times 4 \cdot \\ \hline 103 \end{array}$$

$$\begin{array}{r} 21 \\ \times 6 \\ \hline 126 \end{array} \qquad \begin{array}{r} 22 \\ \times 4 \\ \hline 88 \end{array} \qquad \begin{array}{r} 62 \\ \times 3 \cdot \\ \hline 816 \end{array} \qquad \begin{array}{r} 73 \\ \times 3 \\ \hline 219 \end{array}$$

$$\begin{array}{r} 15. \\ \times 3 \cdot \\ \hline 81 \end{array} \qquad \begin{array}{r} 32 \\ \times 4 \\ \hline 128 \end{array} \qquad \begin{array}{r} 82. \\ \times 4 \\ \hline 238 \end{array} \qquad \begin{array}{r} 41 \\ \times 6 \\ \hline 246 \end{array}$$

Timmy
3rd grade

32	25	60
+21	+34	+ 4
53	77	64
59	73	53
+10	+25	+13
141	107	84

JOHN

$$\begin{array}{rrrrr} \frac{1}{4} & \frac{4}{5} & \frac{3}{4} & \frac{5}{8} & \frac{2}{4} \\ +\frac{1}{4} & +\frac{3}{5} & -\frac{2}{4} & -\frac{2}{8} & -\frac{1}{2} \\ \hline 10 & 16 & 1 & 3 & 3 \end{array}$$

$\frac{1}{3}+\frac{1}{3}=8$ $\frac{3}{6}-\frac{1}{2}=6$

$\frac{1}{2}\times\frac{6}{1}=21$ $\frac{1}{3}\times\frac{6}{1}=28$

$\frac{4}{8}\div\frac{7}{2}=\frac{12}{9}$ $\frac{3}{15}\div\frac{3}{5}=\frac{18}{8}$

Debbie

$$\begin{array}{r} 79 \\ -\ 3 \\ \hline 46 \end{array} \quad \begin{array}{r} 14 \\ -\ 5 \\ \hline 41 \end{array} \quad \begin{array}{r} 49 \\ -34 \\ \hline 15 \end{array} \quad \begin{array}{r} 74 \\ -28 \\ \hline 54 \end{array} \quad \begin{array}{r} 70 \\ -\ 8 \\ \hline 10 \end{array}$$

$$\begin{array}{r} 609 \\ -496 \\ \hline 202 \end{array} \quad \begin{array}{r} 115 \\ -\ 29 \\ \hline 114 \end{array} \quad \begin{array}{r} 512 \\ -236 \\ \hline 324 \end{array} \quad \begin{array}{r} 844 \\ -288 \\ \hline 644 \end{array}$$

COMMON SOURCES OF ERROR

3. In Place Value

Liz

85
+67
1412

78
+27
915

74
+33
107

87
+59
1315

33
+23
56

107
+21
128

47
+36
713

83
+76
159

Angela

$$\begin{array}{r} 1\overset{7}{\cancel{8}}{}^{1}6 \\ -\ 22 \\ \hline 1514 \end{array}$$

$$\begin{array}{r} 3\overset{7}{\cancel{8}}{}^{1}5 \\ -\ 22 \\ \hline 3513 \end{array}$$

$$\begin{array}{r} 4\overset{3}{\cancel{3}}{}^{1}1 \\ -\ 25 \\ \hline 406 \end{array}$$

$$\begin{array}{r} 3\overset{7}{\cancel{8}}{}^{1}2 \\ -\ 47 \\ \hline 335 \end{array}$$

$$\begin{array}{r} {}^{1}2{}^{11}2{}^{1}8 \\ -\ 31 \\ \hline 1817 \end{array}$$

$$\begin{array}{r} 1\overset{3}{\cancel{4}}{}^{1}1 \\ -\ 38 \\ \hline 103 \end{array}$$

Place Value

Allison
5th grader

+63
224
+309
996

1 804
+1,938
2 842 ✓

405
-172
373 ✓

729
-607
1 22

605
-327
322 ✓

1
4417
6325
+4952
15,9[illegible]94
6

5
x6
30

10
x 6
60

15
x 2
30

30
x3
90

81
x 3 ✓
213

8
x6
~~30~~
48

SIMS:

$$\begin{array}{r} \overset{5}{3}\,8 \\ +7\,6 \\ \hline 1\,5\,9 \end{array} \qquad \begin{array}{r} \overset{2}{9}\,2 \\ +7\,9 \\ \hline 1\,8\,9 \end{array} \qquad \begin{array}{r} \overset{2}{3}\,5 \\ +1\,6 \\ \hline 6\,9 \end{array} \qquad \begin{array}{r} \overset{3}{3}\,8 \\ +1\,4 \\ \hline 7\,9 \end{array}$$

$$\begin{array}{r} \overset{3}{2}\,6 \\ +3\,6 \\ \hline 8\,9 \end{array} \qquad \begin{array}{r} \overset{7}{2}\,8 \\ +3\,8 \\ \hline 1\,0\,9 \end{array}$$

COMMON SOURCES OF ERROR

4. Random Responses and Assumptions

Mike

$$\begin{array}{r} 3 \\ +1 \\ \hline 5 \end{array} \qquad \begin{array}{r} 2 \\ +4 \\ \hline 4 \end{array} \qquad \begin{array}{r} 6 \\ +3 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 2 \\ +0 \\ \hline 4 \end{array} \qquad \begin{array}{r} 0 \\ +4 \\ \hline 2 \end{array} \qquad \begin{array}{r} 3 \\ +2 \\ \hline 5 \end{array} \qquad \begin{array}{r} 0 \\ +5 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 0 \\ +4 \\ \hline 2 \end{array} \qquad \begin{array}{r} 4 \\ +3 \\ \hline 6 \end{array} \qquad \begin{array}{r} 2 \\ +1 \\ \hline 3 \end{array} \qquad \begin{array}{r} 0 \\ +3 \\ \hline 2 \end{array} \qquad \begin{array}{r} 2 \\ +2 \\ \hline 4 \end{array}$$

LEONARD (AGE 6)

NO PRESCHOOL EXPERIENCE, A LOW FUNCTIONING 1ST GRADE CHILD.
HISTORY SHOWS HIS SISTER REPEATING 1ST GRADE THREE TIMES.
INSTRUCTIONAL GOAL: TO WRITE HIS NUMBERS FROM 1 TO 100.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	56
51	52	53	53	55	56	57	58	59	70
71	72	73	73	75	76	77	78	789	80
81	82	83	83	85	86	87	88	89	90
91	92	93	93	95	96	97	98	99	100

NAME Leonard

ShAron 2nd gr.
1 YearsoLd

Work done

20 +64 84	63 +63 126	50 +50 100	22 +46 68	70 +26 96
70 +53 123	80 +54 134	60 +53 113	82 +82 164	50 +46 96

Work Observed

62 +51 14	73 +50 15	81 +90 18	65 +53 19	70 +42 13
15 +92 17	70 +33 13	82 +54 19	80 +73 18	

SELF-TESTING

ACTIVITIES

Patricia

57 +21 78	71 +28 99	3 ⊖2 1	22 +36 58	26 +43 69	7 ⊖4 3	1 82 +9 91
1 38 +2 40	1 44 +6 50	4 ⊖2 2	6 ⊖5 1	80 +10 90	33 +23 56	50 +24 74
1 38 +8 46	2 86 +6 ✓ 101	6 ⊖3 3	1 64 +9 73	1 45 +28 73	44 +24 68	5 ⊖3 2
1 36 +7 43	33 +64 97	54 +32 86	1 39 +9 48	1 47 +6 53	8 ⊖4 4	1 85 +7 92
38 +61 99	1 65 +9 74	4 ⊖1 ✓ 2	1 38 +7 45	1 45 +14 ✓ 89	1 23 +17 40	
7 ⊖2 5	35 +41 76	1 64 +9 73	3 ⊖1 2	1 47 +7 54	1 38 +23 61	

example 1

Name katny

$\frac{15}{30} = 50\%$

$\begin{array}{r}2\\+2\\\hline 4\end{array}$	$\begin{array}{r}2\\+1\\\hline 3\end{array}$	$\begin{array}{r}3\\+2\\\hline 5\end{array}$	$\begin{array}{r}1\\+1\\\hline 2\end{array}$	$\begin{array}{r}1\\+2\\\hline 3\end{array}$	$\begin{array}{r}1\\+3\\\hline 4\end{array}$
$\begin{array}{r}2\\+3\\\hline 5\end{array}$	$\boxed{\begin{array}{r}0\\+3\\\hline 4\end{array}}$	$\boxed{\begin{array}{r}3\\+3\\\hline 5\end{array}}$	$\boxed{\begin{array}{r}2\\+0\\\hline 3\end{array}}$	$\boxed{\begin{array}{r}4\\+2\\\hline 5\end{array}}$	$\begin{array}{r}1\\+4\\\hline 5\end{array}$
$\boxed{\begin{array}{r}4\\+1\\\hline 6\end{array}}$	$\boxed{\begin{array}{r}6\\+0\\\hline 7\end{array}}$	$\begin{array}{r}1\\+5\\\hline 6\end{array}$	$\boxed{\begin{array}{r}5\\+0\\\hline 6\end{array}}$	$\boxed{\begin{array}{r}0\\+6\\\hline 7\end{array}}$	$\begin{array}{r}2\\+2\\\hline 4\end{array}$
$\boxed{\begin{array}{r}0\\+2\\\hline 3\end{array}}$	$\boxed{\begin{array}{r}4\\+0\\\hline 5\end{array}}$	$\begin{array}{r}3\\+1\\\hline 4\end{array}$	$\begin{array}{r}1\\+0\\\hline 1\end{array}$	$\boxed{\begin{array}{r}0\\+4\\\hline 5\end{array}}$	$\begin{array}{r}5\\+1\\\hline 6\end{array}$
$\boxed{\begin{array}{r}6\\+0\\\hline 7\end{array}}$	$\boxed{\begin{array}{r}4\\+1\\\hline 6\end{array}}$	$\boxed{\begin{array}{r}3\\+3\\\hline 5\end{array}}$	$\begin{array}{r}2\\+2\\\hline 4\end{array}$	$\boxed{\begin{array}{r}0\\+5\\\hline 6\end{array}}$	$\begin{array}{r}3\\+2\\\hline 5\end{array}$

Edgar

$$\begin{array}{r} 28 \\ \times 14 \\ \hline 112 \\ 82 \\ \hline 932 \end{array} \qquad \begin{array}{r} 16 \\ \times 45 \\ \hline 80 \\ 244 \\ \hline 2{,}520 \end{array} \qquad \begin{array}{r} 26 \\ \times 38 \\ \hline 208 \\ 186 \\ \hline 2{,}068 \end{array}$$

$$\begin{array}{r} 22 \\ \times 59 \\ \hline 198 \\ 110 \\ \hline 1{,}298 \end{array} \qquad \begin{array}{r} 81 \\ \times 16 \\ \hline 486 \\ 18 \\ \hline 676 \end{array} \qquad \begin{array}{r} 14 \\ \times 36 \\ \hline 84 \\ 123 \\ \hline 2{,}314 \end{array}$$

EXERCISE 5

GINA (AGE 7)

FIRST GRADER OF NORMAL ABILITY.

6	1	3	0	5	7	6
+ 2	+ 3	+ 4	+ 2	+ 2	+ 2	+ 4
8	7	6	8	8	8	6
5	10	11	2	2	1	7
+ 5	+ 1	+ 3	+ 6	+ 2	+ 2	+ 4
5	9	7	4	8	8	6
3	5	5	4	1	3	
+ 2	+ 2	+ 0	+ 2	+ 7	+ 6	
8	8	5	8	3	4	

ASSESSMENT $\frac{1}{20}$

CBA T76

BOBBY, AGE 8 YRS. 4 MO.

ADDITION

5	3	4	3	6	3	3	2
3	1	2	0	3	2	4	2
8	4	6	3	9	5	7	4

5	1	2	8	6	3	9	4
4	4	7	8	5	8	4	7
9	5	9	16	11	11	12	11

8	6	2	53	22	14	32	22
4	7	9	23	31	35	48	12
13	13	11	76	53	49	710	34

46	67	79	12	34	77	43	16
82	28	34	68	56	15	78	26
11 8	815	1013	710	810	812	1111	312

BASIC EVALUATION TECHNIQUES

Task Analysis

Product Analysis

——Examination of Numerical Responses

——Observing While Working

——Working Aloud

——Efficiency in Problem Solving

APPLICATION OF CURRICULUM BASED ASSESSMENT

"MATHEMATICS" (continued)

T79

USE of an
INSTRUCTIONAL DELIVERY MODEL
for MATHEMATICS

CBA/T79

CBA

380

370

Establishing Instructional Levels—

Drill and Concluding Tasks

Task Item Selection

Mastering Facts

ASSESSMENT INPUT:

53 + 6 59	24 + 2 26	2 +35 37	8 +81 89	64 + 3 67	25 + 2 27
1 36 + 5 41	1 54 + 8 62	1 8 +39 47	1 2 +59 61	1 48 + 8 56	26 + 7 81 X
42 +33 75	72 +14 86	54 +23 77	61 +28 87	19 +40 59	26 +52 78
1 54 +27 81	1 35 +36 71	1 59 +38 97	1 54 +19 73	1 27 +48 73 X	1 39 +39 76 X
1 49 +23 72	62 +17 79	43 +21 64	1 48 +48 93 X	26 +40 66	1 56 +37 91 X
1 27 + 5 32	1 35 + 8 43	1 87 + 4 91	1 38 + 9 47	1 42 + 8 50	1 46 + 5 51
1 45 + 9 54	1 27 + 7 32 X	1 7 +38 43 X	20 +65 85	1 24 + 9 33	1 8 +38 46

$$\begin{array}{r} 53 \\ +\ \ 6 \\ \hline 59 \end{array}\qquad \begin{array}{r} \overset{1}{5}4 \\ +19 \\ \hline 73 \end{array}\qquad \begin{array}{r} 24 \\ +\ \ 2 \\ \hline 26 \end{array}\qquad \begin{array}{r} \overset{1}{\ }2 \\ +59 \\ \hline 61 \end{array}$$

$$\begin{array}{r} \overset{1}{3}6 \\ +\ \ 5 \\ \hline 41 \end{array}\qquad \begin{array}{r} \overset{1}{\ }8 \\ +39 \\ \hline 47 \end{array}\qquad \begin{array}{r} \overset{1}{4}8 \\ +\ \ 8 \\ \hline 56 \end{array}\qquad \begin{array}{r} \overset{1}{2}6 \\ +\ \ 7 \\ \hline \text{Ɛ}1 \end{array}$$

$$\begin{array}{r} \overset{1}{5}9 \\ +38 \\ \hline 97 \end{array}\qquad \begin{array}{r} \overset{1}{2}7 \\ +48 \\ \hline 73 \end{array}\qquad \begin{array}{r} \overset{1}{3}9 \\ +39 \\ \hline 76 \end{array}\qquad \begin{array}{r} \overset{1}{4}8 \\ +48 \\ \hline 93 \end{array}$$

5 +5					= 10
5 +6	6 +5				= 11
5 +7	6 +6	7 +5			= 12
5 +8	6 +7	7 +6	8 +5		= 13
5 +9	6 +8	7 +7	8 +6	9 +5	= 14

53 + 6	64 +13	2 +59	[✓ 45 +35]	62 +17	76 +14	[✓ 36 + 5]
54 + 8	[✓ 27 +27]	72 +14	87 + 4	[✓ 27 +55]	63 +35	54 +44
19 +53	[✓ 76 +16]	43 +37	66 +24	54 +27	49 +53	[✓ 35 +28]
[✓ 56 +37]	54 +19	28 +53	69 +22	42 +68	55 +34	44 +44
[✓ 16 +45]	[✓ 55 +53]	47 +33	88 +14	[✓ 45 +39]	[✓ 38 +26]	29 +53

53 + 6	24 + 2	2 +35	8 +81	64 + 3	25 + 2
36 + 5	54 + 8	~~8~~ ~~+[illegible]9~~	2 +59	~~4[illegible]~~ ~~+ 8~~	26 + 7
42 +33	72 +14	54 +23	61 +28	19 +40	26 +52
54 +27	35 +36	~~59~~ ~~+[illegible]8~~	54 +19	~~27~~ ~~+[illegible]8~~	~~3[illegible]~~ ~~+[illegible]9~~
49 +23	62 +17	43 +21	~~48~~ ~~+[illegible]8~~	26 +40	56 +37
27 + 5	35 + 8	87 + 4	~~[illegible]8~~ ~~+ 9~~	42 + 8	46 + 5
45 + 9	27 + 7	~~7~~ ~~+[illegible]8~~	20 +65	24 + 9	~~8~~ ~~+[illegible]8~~

T85

Mastering Facts

through

Complementing Operations

CBA/T85

CBA

LARRY

	1	2	3	4	5	6	7	8	9
1	1	2	3	4	5	6	7	8	9
2	2	4	6	8	10	12	14	16	18
3	3	6	9	12	15	18	21	24	27
4	4	8	12	16	20	24	28	32	36
5	5	10	15	20	25	30	35	40	45
6	6	12	18	24	30	36	42	48	56
7	7	14	21	28	35	42	49	56	63
8	8	16	24	32	40	48	56	64	72
9	9	18	27	36	45	54	63	72	81

HESITANTS ⊖
UNKNOWNS ○

T87

Mastering Operations

CBA/T87

CBA

T88

Progress Measurement

Rate of Acquisition

Rate of Fluency

Use in Applied Situations

CBA/T88

CBA

DARYN (AGE 10)

IQ FULL SCALE: Approximately 90.

Functioning at 1st Grade Equivalent.

Enrolled in the Multiple Handicapped Department at the Tennessee School for the Deaf.

KNOWNS: 1 + ANY NUMBER 0-9

ANY NUMBER 0-9 + 1

0 + ANY NUMBER 0-9.

ANY NUMBER 0-9 + 0.

2	2	2	3	4
+2	+3	+4	+2	+2

DARYN ...

1ST LESSON

TWO UNKNOWN FACTS ($\begin{array}{r}3\\ \underline{+3}\end{array}$ and $\begin{array}{r}5\\ \underline{+2}\end{array}$) WERE PRESENTED WITH KNOWN FACTS:

$$\begin{array}{rrrrrrrrr}4 & 1 & 2 & 4 & 1 & 3 & 2 & 5 & 8\\ \underline{+1} & \underline{+2} & \underline{+3} & \underline{+2} & \underline{+5} & \underline{+3} & \underline{+4} & \underline{+2} & \underline{+1}\end{array}$$

AT THE END OF THE FIRST DAY DARYN COULD WORK THE NEW FACT $\begin{array}{r}3\\ \underline{+3}\end{array}$ BUT $\begin{array}{r}5\\ \underline{+2}\end{array}$ REMAINED UNKNOWN.

2ND LESSON

ADD TO KNOWNS $\begin{array}{r}3\\ \underline{+3}\end{array}$, ADD TO UNKNOWNS $\begin{array}{r}2\\ \underline{+5}\end{array}$ $\begin{array}{r}5\\ \underline{+2}\end{array}$.

$$\begin{array}{rrrrrrrrr}6 & 0 & 3 & 2 & 2 & 2 & 5 & 5 & 3\\ \underline{+1} & \underline{+4} & \underline{+3} & \underline{+5} & \underline{+3} & \underline{+2} & \underline{+0} & \underline{+2} & \underline{+2}\end{array}$$

AFTER DRILL DARYN HAD LEARNED $\begin{array}{r}2\\ \underline{+5}\end{array}$ and $\begin{array}{r}5\\ \underline{+2}\end{array}$.

3RD LESSON

ADD TO KNOWNS $\begin{array}{r}5\\ \underline{+2}\end{array}$ $\begin{array}{r}2\\ \underline{+5}\end{array}$, ADD TO UNKNOWNS $\begin{array}{r}2\\ \underline{+6}\end{array}$ $\begin{array}{r}2\\ \underline{+7}\end{array}$.

$$\begin{array}{rrrrrrrrr}3 & 5 & 1 & 0 & 2 & 2 & 4 & 2 & 2\\ \underline{+3} & \underline{+2} & \underline{+7} & \underline{+6} & \underline{+6} & \underline{+2} & \underline{+0} & \underline{+5} & \underline{+7}\end{array}$$

AFTER DRILL DARYN KNEW $\begin{array}{r}2\\ \underline{+6}\end{array}$, BUT $\begin{array}{r}2\\ \underline{+7}\end{array}$ REMAINED UNKNOWN.

Presenting Material to Students

Modeling

Prompting

Practicing

Fading

INITIAL OPERATION

Addition:

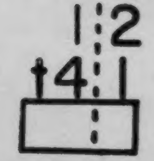
(feedback)

$$\begin{array}{r} 12 \\ +41 \\ \hline 623 \end{array}$$

(model)

$$\begin{array}{r} 12 \\ +41 \\ \hline 53 \end{array}$$

(prompt)



COMPLEMENTARY OPERATION

Multiplication:

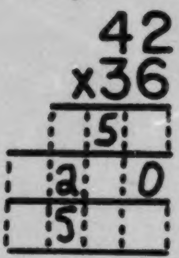
(feedback)

$$\begin{array}{r} 42 \\ \times 36 \\ \hline 2452 \\ 1260 \\ \hline 2{,}262 \end{array}$$

(model)

$$\begin{array}{r} 42 \\ \times 36 \\ \hline 252 \\ 126 \\ \hline 1{,}512 \end{array}$$

(prompt)



MONITORING PROGRESS

Direct Observation

Data Collection & Recording

WORKBOOK FOR CBA

WORKSHEETS AND INSTANT REPLAYS -- PART I

CURRICULUM BASED ASSESSMENT WORKSHOP

-- A Rationale for CURRICULUM BASED ASSESSMENT

1. CURRICULUM CASUALTY GROUP --

   * Include those students who perform in a marginal to poor range academically,

   * Primarily due to an inappropriate match of curriculum with student performance abilities.

2. THE ASSESSMENT CYCLE (4 part process)

   A. Screening --

   B. Identification --

   C. Instruction -- IS THE FOCUS OF CURRICULUM BASED ASSESSMENT.

   D. Measurement of Progress --

INSTANT REPLAY

1. Indicate the four main purposes for collecting assessment information about children:

____

____

____

____

2. Which one is the focus of CURRICULUM BASED ASSESSMENT? ____________

****

THE INSTRUCTIONAL MATCH is the match between the child's ability and the task demand. There are 2 parts:

1) TASK DIFFICULTY
2) STUDENT PERFORMANCE

FACTORS EFFECTING THE MATCH INCLUDE --

A. PROFESSIONAL BIAS

Examples -- Consulting Skills, etc.

B. LEARNING ENVIRONMENT

Examples --

C. LEVELS OF PERFORMANCE

Examples --

* Grade Level --

C. LEVELS OF PERFORMANCE (cont.)

- Reading Level --

- Functional Level --

- Instructional Level -- IS THE ONE LEVEL MOST MEANINGFUL TO LOOK AT A STUDENT'S DAY TO DAY ACADEMIC PERFORMANCE.

****

INSTANT REPLAY

1. Define CURRICULUM BASED ASSESSMENT:

2. What are some logical assumptions associated with Curriculum Based Assessment?

3. Identify four purposes served by Curriculum Based Assessment.

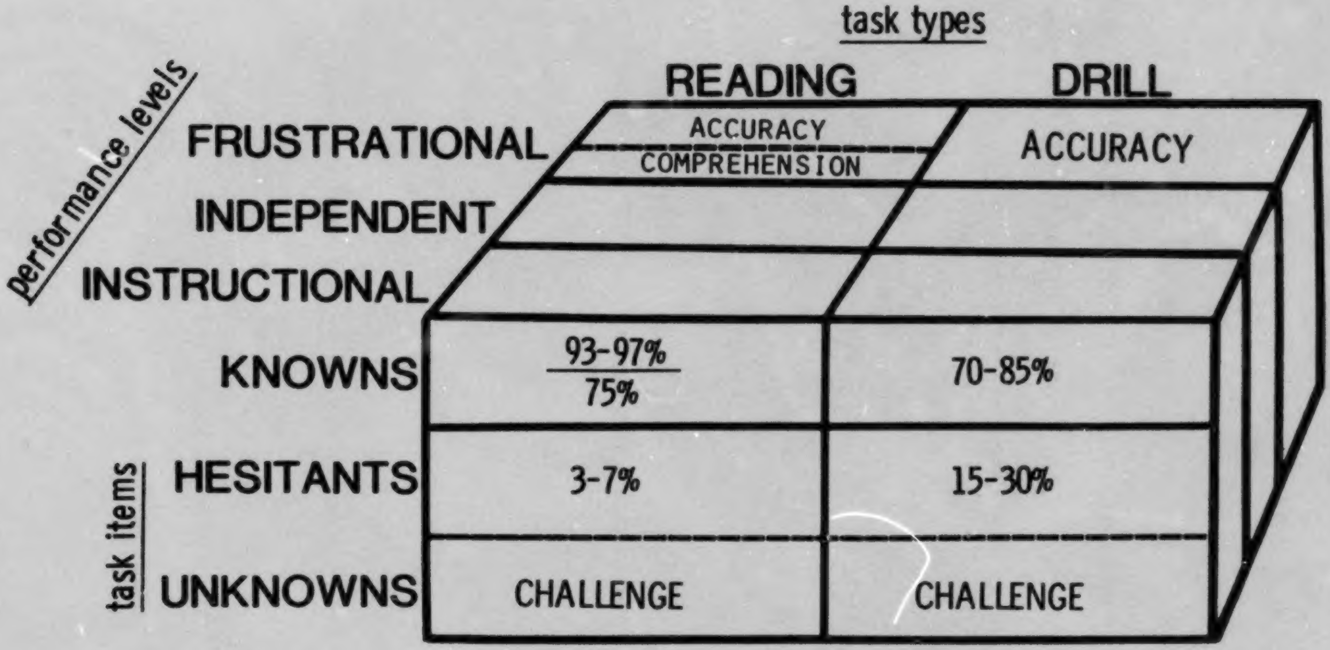
   A.

   B.

   C.

   D.

INSTRUCTIONAL DELIVERY MODEL



task types

performance levels	READING	DRILL
FRUSTRATIONAL	ACCURACY COMPREHENSION	ACCURACY
INDEPENDENT		
INSTRUCTIONAL		

task items	READING	DRILL
KNOWNS	93-97% 75%	70-85%
HESITANTS	3-7%	15-30%
UNKNOWNS	CHALLENGE	CHALLENGE

(E.E. GICKLING, 1975)

CBA/W4

ESSENTIALS OF INSTRUCTIONAL TASKS (3 components common to all instructional assignments)

1. TASK TYPES (first component)

A. ______________________________

B. ______________________________

2. TASK ITEMS (second component)

A. ________________

B. ________________

C. ________________

3. PERFORMANCE LEVELS (third component)

A. Instructional --

B. Independent --

C. Frustrational --

INSTANT REPLAY

1. When selecting materials and methods of instruction, what are some variables which should be considered?

2. All instructional assignments have three components in common. What are they?

BASIC RULES

1. Keep percentage of knowns high
2. Confine new material to the margins of challenge
3. Items of undetermined status are treated as unknowns
4. Prepare content before drill (BECOME FAMILIAR WITH THE MATERIAL)
5. Present drill before content
6. All tasks are carried to their logical conclusion

CBA/W7

INSTANT REPLAY

1. When assessing for the purposes of developing an instructional match, what are the main assessment dimensions?

2. In effecting a match, what constitutes an acceptable criteria for appropriate selection?

3. The Curriculum Based Assessment Model provides a structure for teachers to improve their instructional delivery. Discuss how it accomplishes this.

WORKSHEETS AND INSTANT REPLAYS

APPLICATION OF CURRICULUM BASED ASSESSMENT -- Reading PART II

1. A Model of Reading Scope & Sequence --

__________ Readiness Skills

__________ Word Recognition Skills

__________ Passage Reading

__________ Reading Comprehension

__________ Reading Fluency

__________ Reading and Study Skills in Content Areas

2. Some Important Assumptions About A Curriculum Based Assessment

   Reading Model --

   * Perceptual and Processing Tasks are not prerequisites to reading tasks.

   * Materials can be assets or deterents to reading.

   * Assessment is to be accurate, continuous and lead to instructional improvement.

   * Assessment activities should be directly related to teaching activities.

   * OTHERS --

THREE PRINCIPLES TO CONSIDER ABOUT CURRICULUM BASED ASSESSMENT

1. CONVERTIBLE DATA --

2. COMFORTABLE PERFORMANCE --

3. COMPLEMENTING TASKS --

COMPLEMENTING TASKS

"JOHN WAS IN THE FIRST GRADE WHEN I MET HIM. HIS SPEECH WAS CHARACTERIZED BY A NOTICABLE TONGUE PROTRUSION, LISPS, AND A WEAK R. HIS GRAMMAR WAS CHARACTERIZED BY SUCH STATEMENTS AS "HER AIN'T DERE." HE LACKED SKILL IN RHYMING AND IN SOUND-BLENDING. HE WAS WEAK IN MOST AUDITORY SKILLS. HIS STRENGTHS CONSISTED OF AN ADEQUATE VISUAL CHANNEL, GOOD HANDWRITING SKILLS, AND GOOD ABILITY IN NUMBERS. YOU MIGHT BE CURIOUS ABOUT HIS READING PROGRAM.

IN THE CLASSROOM JOHN WAS RECEIVING INSTRUCTION IN THE FOLLOWING: A PHONETIC READING PROGRAM IN WHICH THE SHORT VOWELS WERE INTRODUCED BEFORE THE CONSONANTS; AN ADDITIONAL AND INDEPENDENT PHONICS PROGRAM UNRELATED TO THE READING PROGRAM; A SPELLING PROGRAM THAT WAS PHONETICALLY BASED BUT WHICH WAS UNRELATED TO EITHER THE READING OR THE ADDITIONAL PHONICS PROGRAM; AND HE WAS EXPECTED TO WATCH THE ELECTRIC COMPANY PROGRAM ON TELEVISION EVERY NOON WHILE EATING HIS LUNCH.

JOHN WENT TO A REMEDIAL READING TEACHER FOR ONE-HALF HOUR EACH DAY. SHE HAD BEEN CAREFULLY TAUGHT BY HER UNIVERSITY NEVER TO USE THE SAME MATERIAL IN THE REMEDIAL PROGRAM THAT IS USED IN THE CHILD'S CLASSROOM. SO SHE WAS INSTRUCTING HIM IN STILL ANOTHER PHONETICALLY BASED READING PROGRAM, IN THIS ONE, THE CONSONANTS WERE INTRODUCED BEFORE THE VOWELS.

BECAUSE JOHN WAS HAVING SO MUCH DIFFICULTY LEARNING HIS SOUNDS, HE WAS ALSO SENT TO THE TITLE I TEACHER FOR ONE-HALF HOUR EACH DAY FOR INDIVIDUAL INSTRUCTION IN PHONICS. SHE USED A STRUCTURED SYSTEM IN WHICH ALL OF THE VOICELESS CONSONANTS WERE TAUGHT FIRST, THEN THE VOICED OR NOISY CONSONANTS, NEXT THE SINGING CONSONANTS AND, FINALLY, THE VOWELS.

HOW WELL COULD JOHN READ BY APRIL OF HIS FIRST GRADE YEAR? HE WAS UNABLE TO READ ONE WORD." (WOOD, 1976, PP. 129-130).

Rebecca's Language Arts Program - Reading

```
                            *    *
                         A Wise Idea
             *    *                          *
   Ann and Yuon stood on the seashore and watched the red and
         *             H            *     *
Yellow sails of the fishing boats grow smaller as the boats
   *      *
Sailed farther and farther away.
     *                  *           *         *
   Every evening they stood here together.  Every evening a
   *          *                             *
dreamy look came into Yuon's eyes as he followed the sails.
      *                 *
Ann knew what he was thinking about.
```

(*If I Were Going*, Row, Peterson & Company, 1971, p. 152)

* 19 Unknowns

H 1 Hesitant

- Writing

Here is a story to copy. Write an ending for the last sentence. Make a picture for your story.

*   *

Tip is a baby elephant. He lives in the zoo. Many children come to see him. The children like to Km to the zee.

Write these sentences. In the place of the blank, write the name of the pet.

*   *

1. I call my pet turtle tum.
2. Can you hear dog bark?

*

3. The name of my hamster is frankie.

Tip is a baby elephant. He live
in the zoo. Man children come
to see him. the children like to
come to the zee.

* 5 Unknowns

(Language for Daily Use, Grade 2, p. 27)

- Spelling

boat	bock
coat	cot
float	Flot
soap	Sopt
low	lo
slow	sloly
snow	sold
show	sole
yellow	yuller
cloak	cloK
shadow	shod
snowflakes	soldflaus
soak	sock
this	this
that	that
the	the
sing	Sing
sang	Sag
ring	rag
rang	rage
thing	

(Spell Correctly, p. 56 & 77)

HOLLY
9.2 YEARS OLD
PLACED IN A THIRD GRADE SELF-CONTAINED L.D. CLASS

ASSESSMENT

KNOWN WORDS	CHALLENGING WORDS	
	(HESITANTS)	(UNKNOWNS)
ONE, TWO, THREE RED, GREEN, PURPLE, ORANGE A, I, HOLLY	FOUR, BLUE, YELLOW, BLACK DIME, NICKEL, PENNY, IN	(ALL OTHER WORDS)

TEACHER PREPARED STORY

ONE, TWO, THREE

ONE, TWO, THREE.

ONE RED BOOK.

ONE GREEN BOOK

ONE PURPLE BOOK

ONE, TWO, THREE.

UNKNOWNS

BOOK

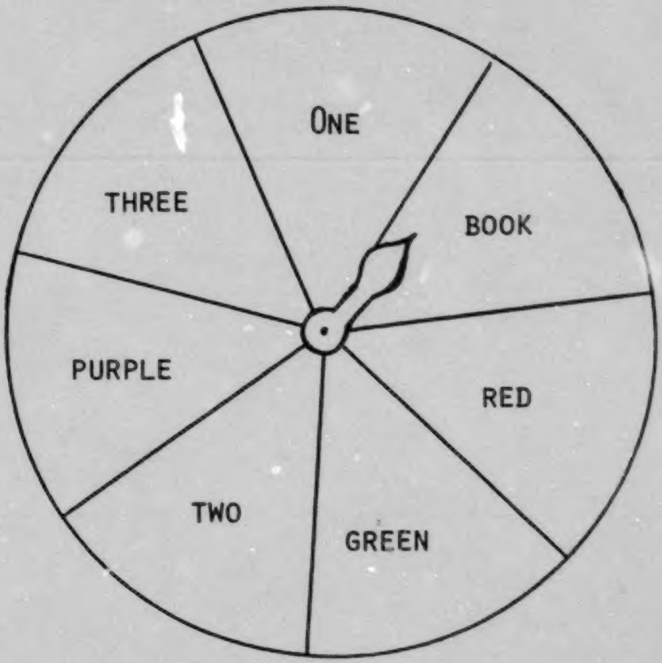
KNOWNS

ONE, TWO,
THREE, RED,
GREEN, PURPLE

COMPREHENSION QUESTIONS:

1. ONE, ______, THREE.
2. ______ RED BOOK.
3. ONE GREEN ________.
4. ______ PURPLE BOOK.

PREPARING DRILL


ONE
BOOK
RED
GREEN
TWO
PURPLE
THREE

PARTICIPANT WORKSHEET 1

JOEY
9.9 YEARS OLD
PLACED IN A RESIDENTIAL SCHOOL FOR THE DEAF

ASSESSMENT

KNOWNS:

SIGHT WORDS	LETTERS	
JOEY	A	M
A	B	N
IS	C	O
AND	D	P
CAR	E	R
MY	F	S
NAME	G	W
BOAT	H	Y
TRAIN	I	
AIRPLANE	J	
HAS	K	
THE	L	

INSTANT REPLAY -- REVIEW

1. In preparing instructional materials for children, what should be the appropriate percentages of familiar material for

   A. Reading ______________

   B. Drill ______________

2. Identify four variations of word attack skills which can be examined during reading assessment.

   ____

   ____

   ____

   ____

3. Identify three levels of reading comprehension.

   ____

   ____

   ____

4. What is the most crucial variable when selecting material and establishing the instructional match?

5. Why are the concepts of reading level, functional level, or grade level confusing?

6. Name and describe the three levels of reading proficiency that are identified by most measures of reading ability?

   ____

   ____

   ____

7. What is the relationship between norm referenced scores and children with low reading ability?

8. What problem may occur if methods and assignments used by a teacher are not complementary?

9. Given the following information on a very poor performing student, develop a teacher prepared story with comprehension questions at the child's instructional level.

KNOWNS

Lenny
A
I
Is
Me
My
No
To
Yes

A C D F I J K M O P S T V X Y

UNKNOWNS

B E GH L N QR U W Z

WORKSHEETS AND INSTANT REPLAYS

USING AN INSTRUCTIONAL DELIVERY MODEL FOR READING -- PART III

PREPARING TRANSITIONAL STORIES --

1. INTERNAL CONSISTENCY --

2. USES AND ABUSES --

TEACHER TRANSITION STORIES

RICK
8.3 Years Old
In Third Grade, Recommended for Diagostic Evaluation

Assessment

```
     **
THE RED TRUCK
```

```
                                     **
"There is a forest far up in the mountains.  It is
   *        **        **          *     **      **
called Big Pines.  There is a little store there.
  **          **       *      **    *            *
There is a ranger station there too.  It is called
      **    **      *
Big Pines Ranger Station.
```

```
** Unknowns
 * Hesitants
```

Knowns	Challenges
a	called
Big	little
far	mountains
forest	Pines
in	ranger
is	station
it	store
Red	there
the	too
up	Truck

(First paragraph of Jim Forest and the Bandits, 1967).

JIM FOREST AND THE BANDITS

KNOWNS

30 SIGHT WORDS FROM
THE LIST OF WORDS IN
THE BACK OF THE BOOK

A
ALL
AND
AT
BIG
.
.
.

CHALLENGES

99 HESITANT AND
UNKNOWN WORDS

TRANSITIONAL STORY 1

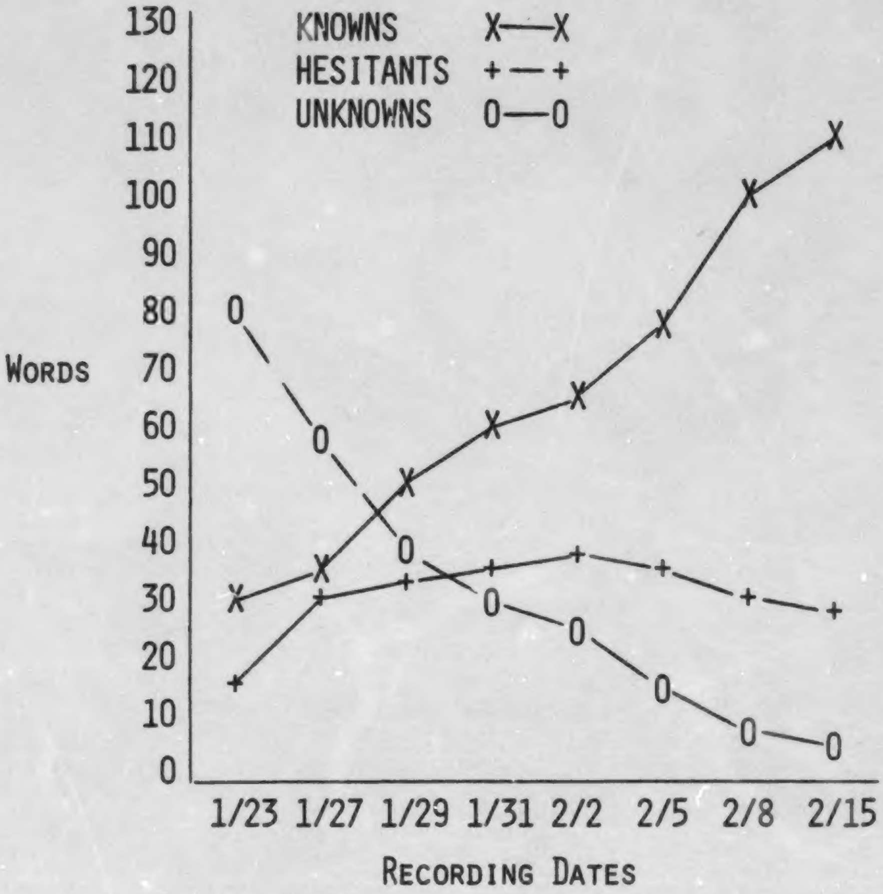
UNCLE DON

Uncle Don took Jim to the **mountains. Uncle Don is a Forest **Ranger **there. He lives **on **top the **mountain. He lives in the trees **on **top the **mountain. He took Jim to look at all the trees in the forest. Jim looked up at all the big trees. He looked far into the forest at all the big trees.

Uncle Don took Jim to the Mountains.
Did Uncle Don live on top the mountain? yes.
He took Jim to see trees.
Is Uncle Don a Forest Ranger? yes.

** Challenges

PROGRESS RECORD



PARTICIPANT WORKSHEET 2

SUSAN
8 YEARS OLD
IN REGULAR THIRD GRADE

ASSESSMENT

AT THE PARK

**THIS *IS BILL. BILL *IS **AT THE **PARK. **HE IS **PLAYING **AT THE **PARK. **HE *IS **HAVING **FUN. JILL IS **AT THE **PARK **TOO. **SHE IS **PLAYING AND **HAVING **FUN. **SOME DUCKS ARE **AT THE **PARK. BILL AND JILL SEE THE DUCKS. **THEY **WANT TO **FEED THE DUCKS. **THEY **HAVE **SOME BREAD. THEY *FEED THE BREAD TO THE DUCKS. THE DUCKS **EAT THE BREAD.

** UNKNOWNS
* HESITANTS

Knowns	Hesitants	Unknowns
AND	IS	AT
ARE		EAT
Bill		FEED
BREAD		FUN
DUCKS		HAVE
Jill		HAVING
SEE		He
THE		PARK
TO		PLAYING
		SHE
		SOME
		They
		THIS
		WANT

Knowns ALSO ASSESSED FROM Key Word List

A
BIG
BOY
GIRL

Unmodified Task

"EXPLORATION"

Pretend you are lost. You wandered away from your teacher and class while you were visiting a department store, a zoo, a museum, or a park (choose one). But you have a walkie-talkie to communicate with your teacher. Now, use the most accurate and descriptive words you can think of to describe the objects around you - which will tell the teacher where she can find you.

Sight words recognized

you, your, are, and, a, the, have, see, with, lost, & teacher

-8

Name Calvin **Tip and Mitten**

Choosing the Right Word

X 1. With is a good ball,Tip.

The With This

X 2. It is find you.

for find dog

X 3. Jack will not have here ball.

here this to

X 4. Tip will come You the ball.

you dog for

X 5. Home a good ball, Tip.

For Home Find

X 6. Are you a find dog, Tip?

good find ball

X 7. Janet, the is the ball.

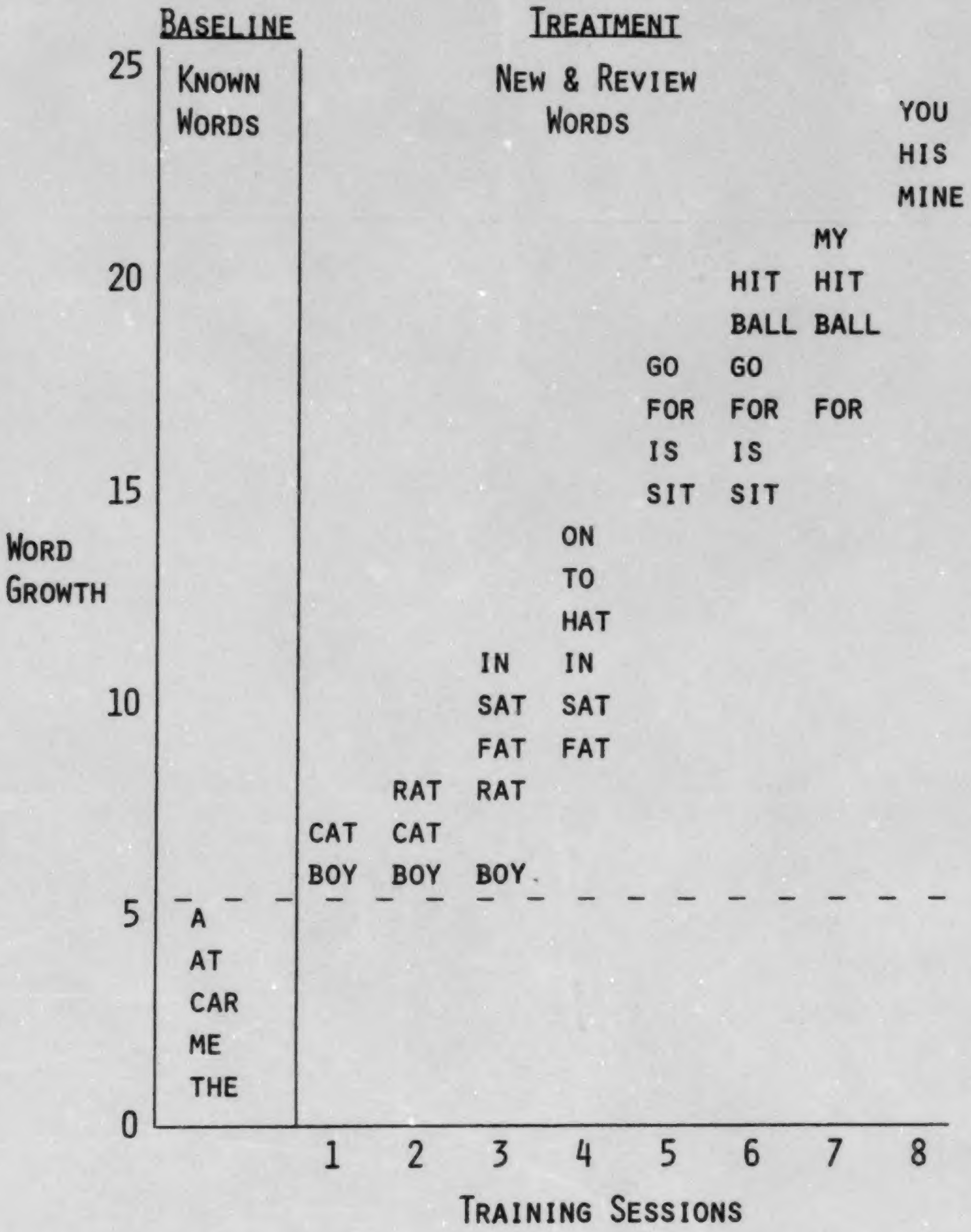
the to this

X 8. Jack and Janet home a dog.

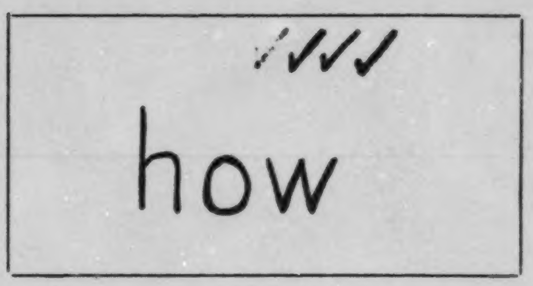
are home have

(Unknown words are circled)

DATA COLLECTION AND RECORDING



CARD FILE



The RED check indicated that "how" was an unknown on first exposure. On the next two exposures, it was a known as shown by two BLACK checks. On the fourth exposure, the student hesitated, receiving a GREEN check.

INSTANT REPLAY

1. What is the basic purpose behind Teacher Transitional Stories?

2. What are the procedures you use in preparing transitional stories?

3. Using the following information, develop a teacher transitional story on the back of this page. (✓✓unknowns, ✓hesitants, unmarked words are knowns):

   THE RED TRUCK✓✓

   "There is a forest far up in the mountains✓✓. It is called✓
   Big Pines✓✓. There✓✓ is a little✓ store✓✓ there✓✓. There✓✓ is a ranger✓✓
   station✓ there✓✓ too✓. It is called✓ Big Pines✓✓ Ranger✓✓ Station✓.

4. Distinguish between acquisition rate and fluency rate:

5. Knowledge and comprehension becomes especially important at grade level ______________ and above.

6. Distinguish between literal comprehension skill and more advanced forms of comprehension:

7. Judging the success of curriculum modifications should be raised upon ____

8. Why is direct observational data especially useful for monitoring student performance?

9. On the next page is an example of a student who was obviously frustrated by the task. Modify the worksheet so that it will conform to the student's instructional level.

NAME ANN DATE ____

COMPLETING SENTENCES
Words ending in le

Write the missing word in the blank in each sentence.

1. The horse is in the ____________.
2. I am able ____________ to go.
3. The king lived in a ____________.
4. The ____________ flew to his nest.
5. Put the dishes on the table ____________.
6. I broke the bottle ____________.
7. Many people ____________ came to the play.
8. The ____________ of the basket broke.
9. I cannot thread the ____________.
10. Draw a circle ____________ on your paper.
11. I saw a ____________ in the lake.
12. Many animals live in the ____________.
13. I have a ____________ pipe.
14. Can you solve the ____________?
15. I bought a ____________ hat.
16. The baby is asleep in her ____________.
17. I will ____________ the canoe.
18. I need a ____________ box.
19. I will sit in the ____________.
20. Light the ____________ on the table.
21. The church ____________ was damaged by the storm.
22. The baby dropped the ____________.

handle
*circle
*little
needle
eagle
candle
turtle
*middle
*table
*people
*bottle
*able
purple
puzzle
bubble
jungle
paddle
castle
cradle
stable
rattle
steeple

Key: * Knowns
○ Unknowns

WORKSHEETS AND INSTANT REPLAYS

CURRICULUM BASED ASSESSMENT APPLIED TO MATHEMATICS -- PART IV

MATHEMATICS -- sample scope and sequence

DIRECTIONS: Take five minutes and check off ( ) each scope and sequence area according to whether or not you are 1) FAMILIAR WITH THAT AREA, 2) NEED REVIEW or 3) UNFAMILIAR. A check sheet follows this list.

Readiness Skills and Concepts

a. Ability to order objects by attributes such as size or length
b. One-to-one correspondence pairing sets of equal size
c. Rote counting or reciting numerals in sequence to 10
d. Rational counting or enumerating the numbers in a set
e. Numeral recognition
f. Matching number with numeral

Mathematics Facts and Associative Operations

a. Addition facts for single digits to 18
b. Subtraction facts with subtrahends to 18
c. Algorithm for two digit addition
d. Algorithm for two digit subtraction
e. Concept of place value and regrouping
f. Addition algorithm with regrouping
g. Subtraction algorithm with regrouping
h. Concept of multiplication
i. Multiplication facts
j. Multiplication algorithm for two or more digit multipliers
k. Concept of division as inverse of multiplication
l. Algorithm for solving division problems
m. Concept of fractional parts
n. Reading and designating fractional parts
o. Addition of like fractions
p. Subtraction of like fractions
q. Finding common factors and prime factors
r. Addition and subtraction of unlike fractions
s. Multiplying fractions
t. Division of fractions
u. Concepts of decimals
v. Algorithms for operations with decimals

Applications of Quantitative Concepts and Skills

a. Problem solving
    1. Reasoning ability
    2. Understanding word problems
    3. Determining relevant information
    4. Set up equations and choose algorithm
    5. Complete problems and check answer
b. Functional math skills for daily living
    1. Time
    2. Money
    3. Measurement

CHECK SHEET FOR SAMPLE SCOPE & SEQUENCE

	FAMILIAR	NEED REVIEW	UNFAMILIAR
READINESS SKILLS AND CONCEPTS			
a.			
b.			
c.			
d.			
e.			
f.			
MATHEMATICS FACTS AND ASSOCIATIVE OPERATIONS			
a.			
b.			
c.			
d.			
e.			
f.			
g.			
h.			
i.			
j.			
k.			
l.			
m.			
n.			
o.			
p.			
q.			
r.			
s.			
t.			
u.			
v.			
APPLICATIONS OF QUANTITATIVE CONCEPTS AND SKILLS			
a. Problem Solving			
1.			
2.			
3.			
4.			
5.			
b. Functional math skills for daily living			
1.			
2.			
3.			

Example A - Larry

$$\begin{array}{r} 7 \\ -3 \\ \hline 4 \end{array} \qquad \begin{array}{r} 4 \\ +4 \\ \hline 0 \end{array} \qquad \begin{array}{r} 6 \\ -3 \\ \hline 3 \end{array} \qquad \begin{array}{r} 4 \\ +2 \\ \hline 2 \end{array}$$

$$\begin{array}{r} 7 \\ +3 \\ \hline 4 \end{array} \qquad \begin{array}{r} 6 \\ -2 \\ \hline 4 \end{array} \qquad \begin{array}{r} 4 \\ -3 \\ \hline 1 \end{array} \qquad \begin{array}{r} 5 \\ +3 \\ \hline 2 \end{array}$$

Identify the wrong operation ____

____

Example B - Joan

$$\begin{array}{r} 7 \\ +2 \\ \hline 14 \end{array} \qquad \begin{array}{r} 3 \\ +4 \\ \hline 12 \end{array} \qquad \begin{array}{r} 2 \\ +6 \\ \hline 12 \end{array} \qquad \begin{array}{r} 5 \\ +4 \\ \hline 20 \end{array}$$

$$\begin{array}{r} 7 \\ +8 \\ \hline 56 \end{array} \qquad \begin{array}{r} 9 \\ +8 \\ \hline 72 \end{array} \qquad \begin{array}{r} 6 \\ +5 \\ \hline 30 \end{array} \qquad \begin{array}{r} 4 \\ +7 \\ \hline 28 \end{array}$$

Identify the wrong operation ____

____

Example C - Bill

$$\begin{array}{r} 9 \\ +8 \\ \hline 17 \end{array} \qquad \begin{array}{r} 11 \\ +9 \\ \hline 20 \end{array} \qquad \begin{array}{r} 12 \\ +41 \\ \hline 5623 \end{array} \qquad \begin{array}{r} 15 \\ +23 \\ \hline 3748 \end{array}$$

$$\begin{array}{r} 7 \\ +5 \\ \hline 12 \end{array} \qquad \begin{array}{r} 35 \\ +31 \\ \hline 6846 \end{array} \qquad \begin{array}{r} 21 \\ +4 \\ \hline 25 \end{array} \qquad \begin{array}{r} 22 \\ +56 \\ \hline 7788 \end{array}$$

Identify the wrong operation ____

____

Example D - Joe

$$\begin{array}{rrrrr} 3 & 43 & 1 & 51 & 82 \\ \underline{+6} & \underline{+6} & \underline{+4} & \underline{+4} & \underline{+5} \\ 9 & 13 & 5 & 10 & 15 \end{array}$$

$$\begin{array}{rrrrr} 57 & 26 & 44 & 21 & 7 \\ \underline{+4} & \underline{+1} & \underline{+3} & \underline{+5} & \underline{+20} \\ 14 & 9 & 11 & 8 & 9 \end{array}$$

Identify the Algorithm error ______________________________

____

Example E - Greg

$$\begin{array}{rrrr} {}^{4}14 & 73 & {}^{5}39 & {}^{6}16 \\ \underline{\times\ 6} & \underline{\times\ 3} & \underline{\times\ 5} & \underline{\times\ 6} \\ 102 & 219 & 204 & 123 \end{array}$$

$$\begin{array}{rrrr} {}^{5}17 & 62 & 82 & {}^{2}28 \\ \underline{\times\ 5} & \underline{\times\ 3} & \underline{\times\ 4} & \underline{\times\ 4} \\ 103 & 816 & 238 & 103 \end{array}$$

Identify the Algorithm error ______________________________

____

Example F - Timmy

$$\begin{array}{r} 32 \\ +21 \\ \hline 53 \end{array} \qquad \begin{array}{r} 25 \\ +34 \\ \hline 77 \end{array} \qquad \begin{array}{r} 60 \\ +\ 4 \\ \hline 64 \end{array} \qquad \begin{array}{r} 59 \\ +10 \\ \hline 141 \end{array}$$

$$\begin{array}{r} 73 \\ +25 \\ \hline 107 \end{array} \qquad \begin{array}{r} 53 \\ +13 \\ \hline 84 \end{array} \qquad \begin{array}{r} 62 \\ +15 \\ \hline 86 \end{array} \qquad \begin{array}{r} 87 \\ +25 \\ \hline 157 \end{array}$$

Identify the Algorithm error ______________________________

____

Example G - John

$$\begin{array}{r} 1/4 \\ +1/4 \\ \hline 10 \end{array} \qquad \begin{array}{r} 4/5 \\ +3/5 \\ \hline 16 \end{array} \qquad \begin{array}{r} 3/4 \\ -2/4 \\ \hline 1 \end{array} \qquad \begin{array}{r} 5/8 \\ -2/8 \\ \hline 3 \end{array} \qquad \begin{array}{r} 2/4 \\ -1/2 \\ \hline 3 \end{array}$$

$1/3 + 1/3 = 8$ $\qquad$ $3/6 - 1/2 = 6$ $\qquad$ $1/2 \times 6/1 = 21$

$4/8 - 2/2 = 12/4$ $\qquad$ $3/15 - 3/5 = 18/8$

Identify the Algorithm error ______________________________

____

Example H - Debbie

$$\begin{array}{r} 79 \\ -\ 3 \\ \hline 46 \end{array} \qquad \begin{array}{r} 14 \\ -\ 5 \\ \hline 41 \end{array} \qquad \begin{array}{r} 49 \\ -34 \\ \hline 15 \end{array} \qquad \begin{array}{r} 74 \\ -28 \\ \hline 54 \end{array} \qquad \begin{array}{r} 70 \\ -\ 8 \\ \hline 10 \end{array}$$

$$\begin{array}{r} 608 \\ -496 \\ \hline 202 \end{array} \qquad \begin{array}{r} 115 \\ -\ 29 \\ \hline 114 \end{array} \qquad \begin{array}{r} 512 \\ -236 \\ \hline 324 \end{array} \qquad \begin{array}{r} 844 \\ -288 \\ \hline 614 \end{array}$$

Identify the Algorithm error ______________________________

____

Example I - Liz

$$\begin{array}{rrrr} 85 & 78 & 74 & 87 \\ +67 & +27 & +33 & +59 \\ \hline 1412 & 915 & 107 & 1315 \end{array}$$

$$\begin{array}{rrrr} 33 & 107 & 47 & 83 \\ +23 & +21 & +36 & +76 \\ \hline 56 & 128 & 713 & 159 \end{array}$$

Identify place value error ______________________________

____

Example J - Angela

$$\begin{array}{rrr} 1\overset{7}{\cancel{8}}\overset{1}{6} & 3\overset{7}{\cancel{8}}\overset{1}{5} & 4\overset{2}{\cancel{3}}\overset{1}{1} \\ -22 & -22 & -25 \\ \hline 1514 & 3513 & 406 \end{array}$$

$$\begin{array}{rrr} 3\overset{7}{\cancel{8}}2^{1} & 1\overset{1}{\cancel{2}}\overset{1}{\cancel{2}}8^{1} & 1\overset{3}{\cancel{7}}1^{1} \\ -47 & -31 & -38 \\ \hline 335 & 1817 & 103 \end{array}$$

Identify place value error ______________________________

____

Example K - Allison

$$\begin{array}{r} 463 \\ 224 \\ +309 \\ \hline 996 \end{array} \qquad \begin{array}{r} 1804 \\ -1,938 \\ \hline 28421 \end{array} \qquad \begin{array}{r} 405 \\ -172 \\ \hline 373 \end{array} \qquad \begin{array}{r} 729 \\ -607 \\ \hline 122 \end{array}$$

$$\begin{array}{r} 605 \\ -327 \\ \hline 322 \end{array} \qquad \begin{array}{r} 4417 \\ 6325 \\ +4952 \\ \hline 15,994 \end{array} \qquad \begin{array}{r} 5 \\ x6 \\ \hline 30 \end{array} \qquad \begin{array}{r} 10 \\ x6 \\ \hline 60 \end{array}$$

$$\begin{array}{r} 15 \\ x2 \\ \hline 30 \end{array} \qquad \begin{array}{r} 30 \\ x3 \\ \hline 90 \end{array} \qquad \begin{array}{r} 81 \\ x3 \\ \hline 213 \end{array} \qquad \begin{array}{r} 8 \\ x6 \\ \hline \cancel{30} \end{array}\ 48$$

Identify the place value error ______________________________

____

Example L - Sims

$$\begin{array}{r} 2 \\ 38 \\ +14 \\ \hline 79 \end{array} \qquad \begin{array}{r} 3 \\ 26 \\ +36 \\ \hline 89 \end{array} \qquad \begin{array}{r} 7 \\ 28 \\ +38 \\ \hline 109 \end{array}$$

$$\begin{array}{r} 5 \\ 38 \\ +76 \\ \hline 159 \end{array} \qquad \begin{array}{r} 2 \\ 92 \\ +79 \\ \hline 189 \end{array} \qquad \begin{array}{r} 2 \\ 35 \\ +16 \\ \hline 69 \end{array}$$

Identify the place value error ______________________________

____

Example M - Mike

$$\begin{array}{r} 3 \\ +1 \\ \hline 5 \end{array} \qquad \begin{array}{r} 2 \\ +4 \\ \hline 4 \end{array} \qquad \begin{array}{r} 6 \\ +3 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 2 \\ +0 \\ \hline 4 \end{array} \qquad \begin{array}{r} 0 \\ +4 \\ \hline 2 \end{array} \qquad \begin{array}{r} 3 \\ +2 \\ \hline 5 \end{array} \qquad \begin{array}{r} 0 \\ +5 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 0 \\ +4 \\ \hline 2 \end{array} \qquad \begin{array}{r} 4 \\ +3 \\ \hline 6 \end{array} \qquad \begin{array}{r} 2 \\ +1 \\ \hline 3 \end{array} \qquad \begin{array}{r} 0 \\ +3 \\ \hline 2 \end{array} \qquad \begin{array}{r} 2 \\ +2 \\ \hline 4 \end{array}$$

Example N - Leonard

As a math assignment he was asked to write his numbers from 1 - 100.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

NAME Leonard

Observational comments

EXAMPLE O - SHARON

Assignments handed in:

$$\begin{array}{r} 20 \\ +64 \\ \hline 84 \end{array} \qquad \begin{array}{r} 63 \\ +63 \\ \hline 126 \end{array} \qquad \begin{array}{r} 50 \\ +50 \\ \hline 100 \end{array} \qquad \begin{array}{r} 22 \\ +46 \\ \hline 68 \end{array} \qquad \begin{array}{r} 70 \\ +26 \\ \hline 96 \end{array}$$

$$\begin{array}{r} 70 \\ +53 \\ \hline 123 \end{array} \qquad \begin{array}{r} 80 \\ +54 \\ \hline 134 \end{array} \qquad \begin{array}{r} 60 \\ +53 \\ \hline 113 \end{array} \qquad \begin{array}{r} 82 \\ +82 \\ \hline 164 \end{array} \qquad \begin{array}{r} 50 \\ +46 \\ \hline 96 \end{array}$$

Responses during direct observation:

$$\begin{array}{r} 62 \\ +51 \\ \hline \end{array} \qquad \begin{array}{r} 73 \\ +150 \\ \hline \end{array} \qquad \begin{array}{r} 81 \\ +90 \\ \hline \end{array} \qquad \begin{array}{r} 65 \\ +53 \\ \hline \end{array} \qquad \begin{array}{r} 70 \\ +42 \\ \hline \end{array}$$

$$\begin{array}{r} 15 \\ +92 \\ \hline 17 \end{array} \qquad \begin{array}{r} 70 \\ +33 \\ \hline 13 \end{array} \qquad \begin{array}{r} 82 \\ +54 \\ \hline 19 \end{array} \qquad \begin{array}{r} 80 \\ +73 \\ \hline 18 \end{array}$$

Patricia

						1
57	71	3	22	26	7	82
+21	+28	−2	+36	+43	−4	+9
78	99	1	58	69	3	91

1	1					
38	44	4	6	80	33	50
+2	+6	−2	−5	+10	+23	+24
40	50	2	1	90	56	74

1	2		1	1		
38	86	6	64	45	44	5
+8	+6	−3	+9	+28	+24	−3
46	✓ 101	3	73	73	68	2

1			1	1		1
36	33	54	39	47	8	85
+7	+64	+32	+9	+6	−4	+7
43	97	86	48	53	4	92

	1		1	1	1
38	65	4	38	65	23
+61	+9	−1	+7	+14	+17
99	74	✓ 2	45	✓ 89	40

		1		1	1
7	35	64	3	47	38
−2	+41	+9	−1	+7	+23
5	76	73	2	54	61

Example Q - Kathy

Name Kathy

$\frac{15}{30} = 50\%$

$\begin{array}{r} 2 \\ +2 \\ \hline 4 \end{array}$	$\begin{array}{r} 2 \\ +1 \\ \hline 3 \end{array}$	$\begin{array}{r} 3 \\ +2 \\ \hline 5 \end{array}$	$\begin{array}{r} 1 \\ +1 \\ \hline 2 \end{array}$	$\begin{array}{r} 1 \\ +2 \\ \hline 3 \end{array}$	$\begin{array}{r} 1 \\ +3 \\ \hline 4 \end{array}$
$\begin{array}{r} 2 \\ +3 \\ \hline 5 \end{array}$	$\boxed{\begin{array}{r} 0 \\ +3 \\ \hline 4 \end{array}}$	$\boxed{\begin{array}{r} 3 \\ +3 \\ \hline 5 \end{array}}$	$\boxed{\begin{array}{r} 2 \\ +0 \\ \hline 3 \end{array}}$	$\boxed{\begin{array}{r} 4 \\ +2 \\ \hline 5 \end{array}}$	$\begin{array}{r} 1 \\ +4 \\ \hline 5 \end{array}$
$\boxed{\begin{array}{r} 4 \\ +1 \\ \hline 6 \end{array}}$	$\boxed{\begin{array}{r} 6 \\ +0 \\ \hline 7 \end{array}}$	$\begin{array}{r} 1 \\ +5 \\ \hline 6 \end{array}$	$\boxed{\begin{array}{r} 5 \\ +0 \\ \hline 6 \end{array}}$	$\boxed{\begin{array}{r} 0 \\ +6 \\ \hline 7 \end{array}}$	$\begin{array}{r} 2 \\ +2 \\ \hline 4 \end{array}$
$\boxed{\begin{array}{r} 0 \\ +2 \\ \hline 3 \end{array}}$	$\boxed{\begin{array}{r} 4 \\ +0 \\ \hline 5 \end{array}}$	$\begin{array}{r} 3 \\ +1 \\ \hline 4 \end{array}$	$\begin{array}{r} 1 \\ +0 \\ \hline 1 \end{array}$	$\boxed{\begin{array}{r} 0 \\ +4 \\ \hline 5 \end{array}}$	$\begin{array}{r} 5 \\ +1 \\ \hline 6 \end{array}$
$\boxed{\begin{array}{r} 6 \\ +0 \\ \hline 7 \end{array}}$	$\boxed{\begin{array}{r} 4 \\ +1 \\ \hline 6 \end{array}}$	$\boxed{\begin{array}{r} 3 \\ +3 \\ \hline 5 \end{array}}$	$\begin{array}{r} 2 \\ +2 \\ \hline 4 \end{array}$	$\boxed{\begin{array}{r} 0 \\ +5 \\ \hline 6 \end{array}}$	$\begin{array}{r} 3 \\ +2 \\ \hline 5 \end{array}$

Source(s) of Error ______________________________

____

Recommended Instruction ______________________________

____

Example R - Edgar

$$\begin{array}{r} 12 \\ \text{x}32 \\ \hline 24 \\ 63 \\ \hline 654 \end{array} \qquad \begin{array}{r} 28 \\ \text{x}14 \\ \hline 112 \\ 82 \\ \hline 932 \end{array} \qquad \begin{array}{r} 16 \\ \text{x}45 \\ \hline 80 \\ 244 \\ \hline 2520 \end{array} \qquad \begin{array}{r} 26 \\ \text{x}38 \\ \hline 208 \\ 186 \\ \hline 2068 \end{array}$$

$$\begin{array}{r} 14 \\ \text{x}36 \\ \hline 84 \\ 123 \\ \hline 2314 \end{array} \qquad \begin{array}{r} 81 \\ \text{x}16 \\ \hline 486 \\ 18 \\ \hline 676 \end{array} \qquad \begin{array}{r} 22 \\ \text{x}59 \\ \hline 198 \\ 110 \\ \hline 1298 \end{array} \qquad \begin{array}{r} 24 \\ \text{x}16 \\ \hline 144 \\ 42 \\ \hline 564 \end{array}$$

Source(s) of Error ____

____

Recommended Instruction ____

____

Example S - Gina

$$\begin{array}{r} 6 \\ +2 \\ \hline 8 \end{array} \qquad \begin{array}{r} 1 \\ +3 \\ \hline 7 \end{array} \qquad \begin{array}{r} 3 \\ +4 \\ \hline 6 \end{array} \qquad \begin{array}{r} 0 \\ +2 \\ \hline 8 \end{array} \qquad \begin{array}{r} 5 \\ +2 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 7 \\ +2 \\ \hline 8 \end{array} \qquad \begin{array}{r} 6 \\ +4 \\ \hline 6 \end{array} \qquad \begin{array}{r} 5 \\ +5 \\ \hline 5 \end{array} \qquad \begin{array}{r} 10 \\ +1 \\ \hline 9 \end{array} \qquad \begin{array}{r} 5 \\ +0 \\ \hline 5 \end{array}$$

Source(s) of Error ____

____

Recommended Instruction ____

____

Example T - Bobby

$$\begin{array}{r} 5 \\ +3 \\ \hline 8 \end{array} \qquad \begin{array}{r} 3 \\ +0 \\ \hline 3 \end{array} \qquad \begin{array}{r} 6 \\ +3 \\ \hline 9 \end{array} \qquad \begin{array}{r} 8 \\ +8 \\ \hline 16 \end{array} \begin{array}{l} ///////// \\ ////// \\ \end{array} \quad \begin{array}{r} 6 \\ +5 \\ \hline 11 \end{array} \begin{array}{l} \\ /////////// \\ \end{array}$$

$$\begin{array}{r} 3 \\ +8 \\ \hline 11 \end{array} \begin{array}{l} \\ //////// \\ \end{array} \quad \begin{array}{r} 53 \\ +23 \\ \hline 76 \end{array} \qquad \begin{array}{r} 32 \\ +48 \\ \hline 710 \end{array} \qquad \begin{array}{r} 79 \\ +34 \\ \hline 1013 \end{array} \begin{array}{l} \\ ///////////// \\ \end{array} \quad \begin{array}{r} 16 \\ +26 \\ \hline 312 \end{array} \begin{array}{l} \\ //////////// \\ \end{array}$$

Source(s) of Error ____

____

Recommended Instruction ____

____

BASIC EVALUATION TECHNIQUES:

1. Task Analysis

2. Product Analysis

   * Examination of numerical responses

   * Observing while working

   * Working aloud

   * Efficiency in Problem Solving

INSTANT REPLAY

1. Indicate four common sources of error in children's work in mathematics.

2. Explain why an understanding of place value in numeration is essential to math operations.

3. What error pattern is the following student employing? Explain the process.

$$\begin{array}{cccccccc} 6 & 1 & 3 & 6 & 5 & 7 & 6 & 5 \\ +2 & +3 & +4 & +5 & +3 & +1 & +4 & +5 \\ \hline 8 & 7 & 6 & 5 & 7 & 9 & 6 & 5 \end{array}$$

4. Ashlock (1972) has written that errors are usually not isolated events but tend to follow patterns. Why is this valuable information in the diagnosis of math errors?

5. Define Product Analysis.

6. Identify four techniques used in Product Analysis.

7. If you have examined a child's completed work, observed his performance, and still have not discovered the problem, what further technique could you use?

8. Explain why efficiency in problem solving is an appropriate area of diagnosis.

9. Explain how task analysis can be used in the diagnosis of math disabilities.

ASSESSMENT INPUT:

53 + 6 59	24 + 2 26	2 +35 37	8 +81 89	64 + 3 67	25 + 2 27
1 36 + 5 41	1 54 + 8 62	1 8 +39 47	1 2 +59 61	1 48 + 8 56	26 + 7 81 X
42 +33 75	72 +14 86	54 +23 77	61 +28 89	19 +40 59	26 +52 78
1 54 +27 81	1 35 +36 71	1 59 +38 97	1 54 +19 73	1 27 +48 73 X	1 39 +39 76 X
1 49 +23 72	62 +17 79	43 +21 64	1 48 +48 93 X	26 +40 66	1 56 +37 91 X
1 27 + 5 32	1 35 + 8 43	1 87 + 4 91	1 38 + 9 47	1 42 + 8 50	1 46 + 5 51
1 45 + 9 54	1 27 + 7 32 X	1 7 +38 43 X	20 +65 85	1 24 + 9 33	1 8 +38 46

$$\begin{array}{r} \\ 53 \\ +\ \ 6 \\ \hline 59 \end{array} \qquad \begin{array}{r} 1 \\ 54 \\ +19 \\ \hline 73 \end{array} \qquad \begin{array}{r} \\ 24 \\ +\ \ 2 \\ \hline 26 \end{array} \qquad \begin{array}{r} 1 \\ 2 \\ +59 \\ \hline 61 \end{array}$$

$$\begin{array}{r} 1 \\ 36 \\ +\ \ 5 \\ \hline 41 \end{array} \qquad \begin{array}{r} 1 \\ 8 \\ +39 \\ \hline 47 \end{array} \qquad \begin{array}{r} 1 \\ 48 \\ +\ \ 8 \\ \hline 56 \end{array} \qquad \begin{array}{r} 1 \\ 26 \\ +\ \ 7 \\ \hline \text{Ɛ}1 \end{array}$$

$$\begin{array}{r} 1 \\ 59 \\ +38 \\ \hline 97 \end{array} \qquad \begin{array}{r} 1 \\ 27 \\ +48 \\ \hline 73 \end{array} \qquad \begin{array}{r} 1 \\ 39 \\ +39 \\ \hline 76 \end{array} \qquad \begin{array}{r} 1 \\ 48 \\ +48 \\ \hline 93 \end{array}$$

5 +5					= 10
5 +6	6 +5				= 11
5 +7	6 +6	7 +5			= 12
5 +8	6 +7	7 +6	8 +5		= 13
5 +9	6 +8	7 +7	8 +6	9 +5	= 14

53 + 6	64 +13	2 +59	[✓ 45 +35]	62 +17	76 +14	[✓ 36 + 5]
54 + 8	[✓ 27 +27]	72 +14	87 + 4	[✓ 27 +55]	63 +35	54 +44
19 +53	[✓ 76 +16]	43 +37	66 +24	54 +27	49 +53	[✓ 35 +28]
[✓ 56 +37]	54 +19	28 +53	69 +22	42 +68	55 +34	44 +44
[✓ 16 +45]	[✓ 55 +53]	47 +33	88 +14	[✓ 45 +39]	[✓ 38 +26]	29 +53

53 + 6	24 + 2	2 +35	8 +81	64 + 3	25 + 2
36 + 5	54 + 8	8 +[illegible]9	2 +59	[illegible] + [illegible]	26 + 7
42 +33	72 +14	54 +23	61 +28	19 +40	26 +52
54 +27	35 +36	59 +[illegible]8	54 +19	27 +[illegible]	3[illegible] +[illegible]9
49 +23	62 +17	43 +21	48 +[illegible]8	26 +40	56 +37
27 + 5	35 + 8	87 + 4	[illegible]8 + [illegible]	42 + 8	46 + 5
45 + 9	27 + 7	[illegible] +[illegible]	20 +65	24 + 9	[illegible]8 +[illegible]

LARRY

	1	2	3	4	5	6	7	8	9
1	1	2	3	4	5	6	7	8	9
2	2	4	6	8	10	12	14	16	18
3	3	6	9	12	15	18	21	24	27
4	4	8	12	16	20	24	28	32	36
5	5	10	15	20	25	30	35	40	45
6	6	12	18	24	30	36	42	48	56
7	7	14	21	28	35	42	49	56	63
8	8	16	24	32	40	48	56	64	72
9	9	18	27	36	45	54	63	72	81

HESITANTS 0

UNKNOWNS 0

WILLIAM (age 13)

Regular sixth grade classroom
Average intelligence
Functioning at 2nd grade level in Math.

$$\begin{array}{r} 4\quad 2 \\ \times\ 3\quad 6 \\ \hline 24552 \\ 1260 \\ \hline 2,262 \end{array} \qquad \begin{array}{r} 9\quad 7 \\ \times\ 8\quad 4 \\ \hline 1388 \\ 7760 \\ \hline 6628 \end{array} \qquad \begin{array}{r} 7 \\ 6\ \overline{)\ 3\ 6\ 9} \\ 42 \\ \hline 27 \\ 69 \\ \hline \end{array}$$

$$\begin{array}{r} 3\quad 6\quad 9 \\ \times\qquad\quad 6 \\ \hline 2,464 \end{array} \qquad \begin{array}{r} \frac{3}{4} \\ + \frac{1}{2} \\ \hline \end{array} \qquad \begin{array}{r} \frac{7}{8} \\ + \frac{2}{4} \\ \hline \end{array}$$

$$\begin{array}{r} 4\quad /4 \\ -\qquad 8 \\ \hline 6 \end{array} \qquad \begin{array}{r} 1\quad 2 \\ +\ 4\quad 1 \\ \hline 6223 \end{array} \qquad \begin{array}{r} 3\quad 5 \\ +\ 6\quad 4 \\ \hline 9 \end{array} \qquad \begin{array}{r} 9 \\ +\ 8 \\ \hline 17 \end{array}$$

DARYN (AGE 10)

IQ FULL SCALE: Approximately 90.

Functioning at 1st Grade Equivalent.

Enrolled in the Multiple Handicapped Department at the Tennessee School for the Deaf.

KNOWNS: 1 + ANY NUMBER 0-9

ANY NUMBER 0-9 + 1

0 + ANY NUMBER 0-9.

ANY NUMBER 0-9 + 0.

$$\begin{array}{ccccc} 2 & 2 & 2 & 3 & 4 \\ \underline{+2} & \underline{+3} & \underline{+4} & \underline{+2} & \underline{+2} \end{array}$$

DARYN ...

1ST LESSON

TWO UNKNOWN FACTS ($\begin{array}{r}3\\\underline{+3}\end{array}$ and $\begin{array}{r}5\\\underline{+2}\end{array}$) WERE PRESENTED WITH KNOWN FACTS:

$$\begin{array}{rrrrrrrrr} 4 & 1 & 2 & 4 & 1 & 3 & 2 & 5 & 8 \\ \underline{+1} & \underline{+2} & \underline{+3} & \underline{+2} & \underline{+5} & \underline{+3} & \underline{+4} & \underline{+2} & \underline{+1} \end{array}$$

AT THE END OF THE FIRST DAY DARYN COULD WORK THE NEW FACT $\begin{array}{r}3\\\underline{+3}\end{array}$ BUT $\begin{array}{r}5\\\underline{+2}\end{array}$ REMAINED UNKNOWN.

2ND LESSON

ADD TO KNOWNS $\begin{array}{r}3\\\underline{+3}\end{array}$, ADD TO UNKNOWNS $\begin{array}{r}2\\\underline{+5}\end{array}$ $\begin{array}{r}5\\\underline{+2}\end{array}$.

$$\begin{array}{rrrrrrrrr} 6 & 0 & 3 & 2 & 2 & 2 & 5 & 5 & 3 \\ \underline{+1} & \underline{+4} & \underline{+3} & \underline{+5} & \underline{+3} & \underline{+2} & \underline{+0} & \underline{+2} & \underline{+2} \end{array}$$

AFTER DRILL DARYN HAD LEARNED $\begin{array}{r}2\\\underline{+5}\end{array}$ and $\begin{array}{r}5\\\underline{+2}\end{array}$.

3RD LESSON

ADD TO KNOWNS $\begin{array}{r}5\\\underline{+2}\end{array}$ $\begin{array}{r}2\\\underline{+5}\end{array}$, ADD TO UNKNOWNS $\begin{array}{r}2\\\underline{+6}\end{array}$ $\begin{array}{r}2\\\underline{+7}\end{array}$.

$$\begin{array}{rrrrrrrrr} 3 & 5 & 1 & 0 & 2 & 2 & 4 & 2 & 2 \\ \underline{+3} & \underline{+2} & \underline{+7} & \underline{+6} & \underline{+6} & \underline{+2} & \underline{+0} & \underline{+5} & \underline{+7} \end{array}$$

AFTER DRILL DARYN KNEW $\begin{array}{r}2\\\underline{+6}\end{array}$, BUT $\begin{array}{r}2\\\underline{+7}\end{array}$ REMAINED UNKNOWN.

INITIAL OPERATION

Addition:

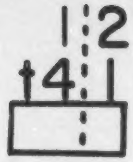
(feedback)

12
+41
623

(model)

12
+41
53

(prompt)



COMPLEMENTARY OPERATION

Multiplication:

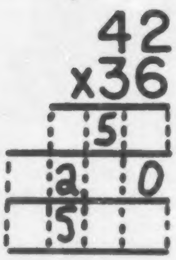
(feedback)

42
x36
2452
1260
2,262

(model)

42
x36
252
126
1,512

(prompt)



INSTANT REPLAY

1. Differentiate between drill exercises and concluding tasks in mathematics?

2. Explain why math worksheets and practice pages from math textbooks are often inappropriate for the student with math difficulties.

   In addition, describe how you might modify such worksheets or exercise pages.

3. Given what you already know about appropriate instructional ratios, describe how you would prepare a drill lesson in mathematics. Include a discussion of the child's rate of acquisition.

4. Instruction in unknown math facts can be approached through the use of complementary operations to rekindle interest and motivation. A student knew many multiplication facts, but has not mastered yet understands the process of division.

   7 x 4 = 28
   8 x 4 = 32
   9 x 4 = 36
   6 x 7 = 42
   6 x 8 = 48
   6 x 9 = 54
   4 x 8 = 32
   6 x 8 = 48
   7 x 8 = 56
   8 x 8 = 64
   9 x 8 = 72
   9 x 7 = 56
   9 x 3 = 27
   9 x 4 = 36

   Prepare a worksheet using the complementary operation of division. Remember to include known and unknown multiplication facts in the appropriate ratios.

5. Explain how modeling may be used to assist a child in learning or correcting errors in algorithm procedures.

INSTANT REPLAY (cont.)

7. Explain why the rate of acquisition might be more important to a teacher than a midterm assessment of progress.

8. Describe how you would modify worksheets or exercise pages from textbooks to be more suitable for a handicapped child.

RESOURCE GUIDE FOR CBA

SEGMENT ONE

A RATIONALE FOR CURRICULUM BASED ASSESSMENT

- Curriculum Casualties—The Basic Focus
- The Assessment Cycle—Areas of Input
- The Instructional Match
  - Task Difficulty vs. Student Performance
  - Factors Affecting the Match
    - Professional Bias
    - The Learning Environment
    - Levels of Performance
- Curriculum Based Assessment
  - Definition
  - Application—An Instructional Delivery Model
    - Task Types
    - Task Items
    - Performance Levels
    - Basic Rules
- Implications for Teaching and Learning
  - Effective Teaching Procedures
  - Research on the Use of the Model
  - A Basic Learning Principle (S^D-R)
  - Competency Testing
- References

CURRICULUM CASUALTIES—THE BASIC FOCUS

Within education, no variable has received more attention nor been the object of more frustration for teachers and for students than curriculum tasks. Likewise, no variable has been more open to daily student/peer comparison than the number of assignments that students receive in their classrooms. A routine examination of such assignments generally shows that even though a majority of students perform satisfactorily, the outputs of a large number of students still remain inadequate in one curriculum aspect or another when compared to those of their peers. Because of this inability to keep pace and their needs for special help, these students could rightfully be called the "casualties" of regular curriculum programs.

In most cases, we are uncertain as to exactly what causes such learning difficulties. A lack of previous experience, lack of readiness skills, poor foundations in basic subject areas, the development of failure sets, and student transiency are all frequently cited as contributing factors. But for most of these students, it is our educated guess that the curriculum moves too fast and demands too much in relation to their existing skills. They get further and further behind and are entrenched in a failure cycle.

When discussing student casualties, one naturally thinks of handicapped populations. With the current emphasis on mainstreaming and the attention being given to training regular teachers to work with handicapped children in regular classroom environments, it is difficult to think otherwise. But handicapped children only represent a portion of those students who are experiencing curriculum difficulties. A far larger number are exhibiting marginal performance within regular classrooms, most often without the benefit of any special assistance.

According to the former Acting Deputy Commissioner of the Bureau of Education for the Handicapped, Edwin Martin, (1974), there is growing evidence that as many as 20 to 40 percent of all children will display sufficient variations in learning or behavior styles to warrant specially designed educational programs for at least short intervals during the school year. Even though these figures may appear to be high, research indicates that educators expect a third of their children in regular grades to obtain below average scores on standardized achievement measures (Helmstadter, 1964; Stevens, 1971). These are the children who are usually swept aside by the indiscriminate and insensitive use of materials and programs based on normative instructional standards.

As the extent of the casualty problem has become more and more evident, there has been a growing interest in why it exists, why it involves so many children, and what to do about it. For example, the establishment of state equivalency examinations for high school graduation is one expression of the public's increasingly critical attitude toward general educational preparation. But educators themselves have not been all that satisfied either. The educational climate today shows a growing unwillingness on the part of educators to place the fault for school failure solely on the child, family or non-school factors. We are much more concerned today about how various factors within the educational environment impact upon, produce, and even maintain, poor performance in the schools. In fact, the production of this module is an attempt to deal with one of these environmental factors.

It is our perspective that students are basically controlled by the curriculum, either for better or worse, and that the majority of school-related problems of mildly handicapped and marginal students are basically curriculum induced. We believe many of the problems are created by curriculum, and that, if we can control it adequately, we can answer many questions about the educational difficulties of these students.

A broad definition of "curriculum" might include the more obvious components of academic skills and physical development and also the subtle and hidden curricula involved in social and emotional adjustment. Each of these components is extremely important in the overall development of the child, and to minimize the importance of any one of them would be a mistake. It is only when performance in one or more of these areas becomes inadequate that the child is singled out as having a special need. Due to the limited parameters and time constraints of this project, however, our efforts will focus on that area where the casualty list seems to be longest—the area of academics. To us, at least, a look at the myriad of assignments and the relative performance of the child with respect to those assignments provides the best means for identifying inadequate performance and the inevitable consequences associated with it.

THE ASSESSMENT CYCLE—AREAS OF INPUT

Educational assessment is the process of acquiring sufficient information to render judgments on behalf of a child. These judgments usually involve programming and placement decisions. For the most part, data is collected and decisions made during four related yet distinct phases, with each phase serving as a major decision point in the assessment cycle. These phases are commonly referred to as: 1) screening,

2) identification, 3) instruction, and 4) the measurement of progress.

Screening

The purpose of screening is to locate children with suspected problems. In cases involving other than physical or sensory problems, screening does not require the use of any formalized method or procedure and is generally done by the classroom teacher. However, when a significant problem is suspected, the function of the screening process is brought to an end with the initiation of the referral for a more in-depth diagnosis.

Identification

At this stage, diagnosticians are concerned with either verifying or discounting the existence of a problem of sufficient magnitude to justify recommending special help. The extent of the problem is generally measured by normative instruments with the degree of variance from the norm indicating the extent of the problem. The identification phase is basically a discriminative process wherein normative comparison plays an essential role; and even though the use of standardized testing is in question, this stage will always necessitate some form of peer, skill, or developmental comparison to demonstrate the extent of the problem.

Instruction

Of the stages in the assessment cycle, the instructional phase is the most continuous. Screening and identification may help make special services available to a student, but these alone will not ensure instructional success. Assessment at this level must be concerned with the daily presentation of assignments to students, as well as student performance. Just as there are differences between teaching and learning, so too are there differences between material and student ability. For the student who is experiencing difficulty with school work, it is not only important that an accurate appraisal of her skills and deficiencies be made, but also that an accurate assessment be made of the demands of specific material chosen for the student. Failure of instruction is cumulative. Unless immediate intervention occurs, results can be devastating for the child who falls behind. In addition to determining a student's skill and curriculum appropriateness, teacher practices and teacher/student/peer interaction should also be assessed as part of the instructional phase of the cycle.

Measurement of Progress

Determining the success of any instructional program depends primarily on objective measurement of student progress. Progress in an instruction program may be measured directly using skill and criterion referenced assessment, or indirectly using standardized achievement tests. Unless the instructional phase was relatively successful, though, a progress accounting will not show the type of positive change that teachers may have hoped for.

Because the stages of the assessment cycle are interrelated, it is easy to assume that input into one phase will automatically contribute to the next. Indeed, this seems to be true with respect to screening and identification. The assumption becomes more tenuous, however, between the identification and instructional stages. The fact that time is being devoted to train school psychologists and educational diagnosticians in the use of non-test-based assessment is evidence of the gap between screening and identification and the instructional process. Information obtained and used during the identification stage is generally not transferable in a functional way to teachers who control a child's instruction. Their tendency to make "standardized recommendations" has hurt the credibility of diagnosticians; they have been somewhat unaware of or insensitive to the influences of curriculum as the medium for teaching. It is our firm belief that the presentation of this workshop on curriculum-based assessment will help to change this situation in favor of the use of curriculum as an assessment and programming tool.

THE INSTRUCTIONAL MATCH

In keeping with Public Law 94-142, the "instructional match" can be defined as "meeting the individual needs of the child". Exactly how this is done, however, hasn't really been defined. By law, apparently, it means providing an appropriate individualized education; but by interpretation, it means whatever is written and agreed upon by the child's multidisciplinary team. This approach may be quite functional because of the flexibility it allows in educational decision making, but the precision of such an approach and its direct application for instruction are left entirely to the discretion of the individual team members. In other words, a flexible approach to defining the instructional match could conceivably result in different programs being written by different team members for the same child depending on their orientation.

Task Difficulty Versus Student Performance

Instead of taking such a global view, we prefer to discuss the instructional match as the interface between the student's skills and task demands. Each time the student is faced with a new assignment, he pits his skills against the task. The relative success of his performance over time is a direct indication of the overall suitability of the assignment to his skills—a measure of the degree of the instructional match made by his teacher.

When the task is sufficiently familar, yet still provides some measure of challenge to bring about optimal learning for the student, the task is said to be on an instructional level. When performance indicates too little challenge or too great a challenge, the student is said to be on an independent level or a frustrational level, respectively.

These three levels represent the degree of instructional match or mismatch between the skills of the student and the learning demands of the instructional task. By examining the student's performance on each task, and making necessary modifications when warranted, it is possible to maintain the match at an instructional level systematically, thus achieving better overall performance over time.

Factors Affecting the Match

Educational experience has shown that the appropriateness of an instructional match is primarily affected by professional and environmental factors. In most cases, the teacher is in direct control of these factors. In some instances, however, external events influence the direction taken by the teacher.

Professional Bias. One area which affects the kind and method of match between a student and instructional material is professional bias. All professional personnel involved in the educational assessment of students attempt to pinpoint areas of disability, missing skills and concepts, and voids in experience which retard school progress. This information is collected, synthesized, and interpreted for use in developing an educational plan to ameliorate a student's learning problems. The similarities of purpose among professionals in the assessment and matching process generally end here, however. The diagnostic-prescriptive process that ensues is a very individualistic and subjective process, particularly when recommendations for instruction are made. What is assessed, how it is done, what it means, and how it applies to instruction really depend upon the unique perceptions and biases of those involved in formulating the match.

Exactly what transpires from all of this depends to a large extent on the theoretical beliefs of the diagnosticians. Theoretical biases have a profound effect on the assessment-treatment cycle, including the choice of instruments and procedures, the meanings attached to acquired data, and the final treatments proposed. In essence, one looks for, finds, and treats what one expects and believes exists. It is our observation that this is true for teachers and other consulting personnel as well as school psychologists.

We have also noted differences in theoretical beliefs between external evaluators and teachers. We have seen that when the inferred position of the evaluator in the hierarchy is higher than the teacher's position, the evaluator's views may supplant those of the teacher and determine the direction of instruction. When this happens, instructional recommendations are greeted with a great deal of uncertainty by the teacher. In such a case, regardless of whose views might be more tenable, a consistent approach to instruction may never be maintained because of less than whole-hearted efforts in putting the original recommendations into effect. To avoid this situation, the theoretical and pragmatic biases of both the teacher and evaluator must be congruent so that a good working relationship between the two can occur and benefit the student.

In addition to possible differences between the views of teachers and evaluators, there are also agreements and differences between teachers themselves which bias the direction of their instructional activities. Much of teaching today is in the form of resource services to regular classroom teachers (e.g., special education resource teachers, remedial reading and math teachers, and Title I teachers). The nature of these resource roles necessitates some degree of understanding and cooperation with classroom teachers. The functions of resource personnel, however, are often predetermined by the dispositions of classroom teachers. What and how they teach depends to a large extent on the instructional demands that teachers make in the regular classrooms. The key is the flexibility that classroom teachers allow; for example, if a teacher indicates to a resource person that she wants certain things taught and that the child will be held accountable regardless of her ability for learning those things, then the instructional match for the resource teacher will be based upon tutorial needs rather than the need for skill development.

The concepts of curriculum based assessment and instruction as developed in these materials necessitate the examination and use of regular classroom materials and the close cooperation with classroom teachers. This is our professional bias. In using this approach, we feel, as Christopolos (1973) does, that informal and formal assessment should proceed from the goals and activities that the classroom teacher is using. In this case, the instructional match will primarily represent modifications in existing curriculum programs rather than the immediate selection of a new curriculum.

The Learning Environment. Environmental factors also exert a significant influence on the child's performance. The learning environment is made up of numerous variables which can be manipulated by the teacher to either enhance or interfere with the effectiveness of the instructional match. Of these variable, we are most concerned with the use of methods and materials, organizational aspects, and teacher/student interaction.

Factors to consider in the selection and use of methods and materials include their theoretical approach, the organization and sequencing of concepts, and the various modes and media used in presentation. Of more direct concern to student performance are the amount of material presented, the rate of introduction of new concepts and the amount of time devoted to teaching them, the amount of repetition and practice, and the type and flexibility of students' response requirements. All of these factors are important, since methods and materials are the basic media of instruction.

Another category of environmental factors includes the organizational aspects of instruction. This refers to such variables as the arrangement of classroom space including seating, study carrels, and work centers, patterns of grouping students for instruction, and teacher/pupil ratios. The manner in which assignments are sequenced and presented throughout the school day, and the type and amount of reinforcement given for study and cooperative activities are also situational variables. Teacher presentations and methods of providing directions must also be considered. For example, directions may be given verbally, with or without visual cues, and responses may be prompted, modeled, or elicited with direct teacher assistance.

The manner in which students participate in learning activities is a third area of concern. Results of observations indicate that teachers expect certain behaviors in certain learning situations. The student's role may be to sit and listen, watch, verablize concepts, demonstrate understanding through concrete tasks, or repeat verbatim. The ability to accurately recognize and follow through on the teacher's verbal and nonverbal (implied) communication will determine the success the student has in the classroom. If the teacher's communication is frequently misinterpreted, the student will be at a considerable disadvantage. For example, the student who is unable to complete his assigned tasks or fails to recognize how his behavior annoys the teacher will be the recipient of little encouragement or positive reinforcement. The same is true about the interaction patterns between a student and his peers.

One of the goals of curriculum based assessment is to take into account and control environmental variables as much as possible. Of those variables which impact on student performance, environmental factors are the most accessible to modification and change. They are also the factors over which teachers have the most direct control.

Levels of Performance. A third factor which has definite implications for the instructional match is the concept of "level" of performance and the descriptive terms attached to it. This concept has multiple meanings for education; "levels" are often misconstrued by educators as representative of ability, much to the detriment of instructional programming and student progress. A discussion of these terms follows.

Grade level is often used synonomously with chronological age in education, hence the common phrase, "He is at grade level". Unfortunately, one of the most blatant errors of teaching is to continue to provide instruction at grade level, regardless of the child's ability, based solely on chronological age. (i.e., "This child should be given fourth grade material because she's ten years old.")

The term is also applied to a child's performance which is not commensurate with that of his peers (e.g., a fifth grader working on second grade materials). In either instance, the use of the term is very broad. It can be based on either the informal observations of the teacher or a more formal analysis using a standardized instrument with scores converted to grade equivalents. Both types of conversions, however, are gross estimates of overall ability, and are relatively insensitive to the specific skills and deficits of the student. As such, they should be interpreted and applied with caution.

A more precise application should be expected from the concept of *reading level*. This term refers to a student's ability to recognize words and comprehend passages as measured by years or portions of years of reading instruction. Increased precision comes from trying to estimate a level of reading performance which is instructional or comfortable for the student while avoiding a frustrational level. Providing this level requires an assessment of the student's word recognition facility, and, even more important, the ability of the student to extract meaning from print. After these levels have been determined, the goal is to choose reading material which is on a similar instructional level for the student. The concept seems sound enough, but what happens in the diagnostic/prescriptive process is that the student's specific skills are collapsed into a single score called a reading level. This level is then often interpreted quite literally to mean the child's actual reading ability. Unfortunately, what educators frequently lose sight of is that this score is merely an estimate of the child's reading ability.

From our observations, we suspect that after independent, instructional, and frustrational levels have been determined, they receive very little attention once the child is assigned a reading book. It is as if the book will now take care of any discrepancy in student skills; at least if not this book, then another one! The same problems apply in choosing books and other reading materials as apply in calculating reading levels of students; that is, the procedures used only allow for an estimate of the difficulty level of a reading selection. This estimate typically appears as a single mean difficulty for the selection and not as a range of probable difficulty. However, a close examination of the difficulty of any selection reveals quite a bit of variability even between one passage and another within the same reading selection. These are a few reasons why "reading level," as used in the instructional matching process, is not as precise as it might have originally appeared, and why the matching process, especially if based on reading level scores below 2.5, is tenuous.

Measurement problems have also been noted in determining the reading levels of students and the material. Although the constructs for determining both levels are somewhat equivalent, their derivative scores vary according to the particular reading measure, test, and instructional system used. It is common knowledge, for example, that reading achievement test scores are usually inflated, whereas the reading levels of basal materials are often underestimated when measured by publishers. If you use a child's inflated performance scores and pair him/her with materials on which the difficulty has been underestimated, how reliable is the instructional match likely to be? There is now also evidence to indicate that standardized achievement tests do not correspond with reading programs being used in classrooms (Jenkins and Pany, 1978). In consideration of these and other shortcomings, the concept of reading level is not all that different from the concept of grade level, at least in practice.

Functional Level. Perhaps the term *functional level* could be used to more accurately reflect actual performance or the level at which a student is adequately performing in a given area of content. (We also think of the term "performance level" as described in the preparation of the Individualized Educational Plan of Public Law 94-142 as being interchangeable with "functional level".) Whether or not either term can accurately reflect a student's skill is doubtful, however, since both are typically used in association with performance discrepancies. The determination of a student's functional level is basically normative regardless of the testing approach being used. The results are interpreted in much the same manner as reading level and grade level equivalents. We are compelled to believe that, as of now, the entire concept of "level" is more a way of defining where a child is than of pin-pointing specific instructional needs.

Instructional Level. When there is a need to describe how students are performing, the use of grade, reading, and functional levels serve the purpose. But this is only a possible starting point for instruction. These scores are static and their measurement periodic, inasmuch as they are not continuously reevaluated during ongoing instruction. Consequently, we do not advocate the use of these types of assessment scores for instructional purposes. It would be a misuse to do so. What we are saying is that performance variance cannot be described nor controlled in any kind of systematic fashion unless one takes into account the nature of each instructional task. Grade, reading, and functional level scores are insensitive to this type of daily measure. Yet without daily measurement, in all probability, the performance of the curriculum casualty student will be sporadic, reflecting the constant fluctuation between frustrational and instructional loadings of tasks. It stands to reason that the most meaningful term from a curriculum standpoint, therefore, is the "instructional level". What we advocate is to control for this level in order to provide more optimal learning experiences for the student and maintain this control over time by choosing, modifying, and designing assignments to conform to established ratios of success.

CURRICULUM BASED ASSESSMENT

The term that we have chosen to use to describe this particular technique seems self-explanatory. The message conveyed is that the curriculum becomes the medium for student assessment. We do not want the reader to misinterpret the process as one of data collection and interpretation in the usual sense, however. Instead, we view the processes of data collection, interpretation, and application, not as separate entities but as interwoven functions of curriculum based assessment, with the emphasis on instruction. The primary goal of curriculum based assessment is to facilitate the decision-making process within the instructional phase of the assessment cycle. Because we are concerned with the acquisition of basic curriculum skills, incoming data which does not lead to direct instructional application is of minimal use.

With this introduction in mind, what we are attempting to do in this section is to define curriculum based assessment as operationally as possible, present the major assumptions on which it is based, and provide the reader with a structure for delivering instruction in a beneficial way to students.

Definition

Curriculum based assessment is a procedure for determining the instructional needs of a student based on the student's ongoing performance in existing course content.

It includes the use of (1) direct observation of the learning environment, (2) analysis of the processes used by the student in approaching tasks, (3) examination of the tasks completed, and (4) the control and arrangement of tasks for the student.

These aspects will become clearer throughout the development of these modules.

Application—An Instructional Delivery Model

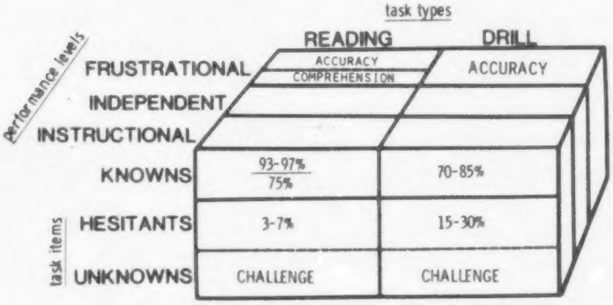
We concur with Orlando and Lynch (1974) that the burden of responsibility for teaching must be changed from requiring every child to meet pre-established learning conditions to changing conditions to meet the individual needs of the child. The intent, at least, of Public Law 94-142 is to bring about this change. However, we express some reservations about the statement: "Until it is decided what children need to learn, the question of how to structure the learning environment is unimportant (p. 464)." This type of dichotomy between instructional decisions and structure is to be discouraged. In actuality, we know that teachers have to structure what they teach in order for effective learning to occur (Postmand and Weingartner, 1969). Naturally, the decision of what to teach precedes the question of how it is to be presented, but one is not separated from the other. Both should be considered together in the instructional decision process. If our observations are reflective of teaching in general, more often than not teachers' decisions of what to teach seem reasonable. The breakdown usually comes because of the way it is presented to students.

In the words of Thomas Gordon (1974), "Teachers are seldom helped by merely being told that they will be more effective if they would only improve their relationship with the young people they teach. This is far too abstract. They want to know how to do it. (p. 25)." That statement could also be applied to the concept of individualizing instruction. Its interpretation is usually far too abstract and its application too vague for instruction to be consistent and effective across teaching personnel.

Most teachers understand the concept of individualized instruction as meeting the needs of each child. The precision for doing this, however, varies from teacher to teacher. Unfortunately, in examining the concept of individualized instruction, educators have been preoccupied with the question of what makes a good teacher. Because of this preoccupation, major emphasis has been placed on "teacher roles" instead of "pupil performance". We believe that more objectivity could be brought to the learning situation if educators were to concentrate upon the product of effective teaching rather than the process. It should be the performance of students that provides teachers with indices of effectiveness.

Another misconception about individualizing instruction is the assumption that if teachers do as they should, then students will learn as they should. Teachers can no longer assume that their best efforts will produce students' best efforts. Instead, they need to learn what represents an optimal level of performance for each student. Maintenance of an optimal level of student performance should be the single most accessible and needed criterion for establishing whether a teacher has effectively individualized. Please note that we place special emphasis on the word "criterion". As an alternative to the abstract and speculative nature of 'individualization", we propose the use of an Instructional Delivery Model. The model (illustrated below) provides a structure for controlling the difficulties encountered by the teacher in deciding what to teach and how it is to be presented. Based upon what we have observed, and the feedback from students, we believe that the model will allow for objectivity in teaching while still encouraging flexibility. It is easy to understand, and through our demonstrations of its application in reading and mathematics, we hope you will see that it is easy to use.

INSTRUCTIONAL DELIVERY MODEL



(E.E. GICKLING, 1975)

It has been our observation that every instructional task contains three essentials. The first is the teacher's actual selection of the instructional task, the second includes the specific items of the task, and the third involves the student's performance or how he did on the task. The first two essentials are clearly under the control of the teacher, whereas the last is contingent upon the student's familiarity with the content and components of the task. These three essentials, the type of task, the task items, and the performance levels constitute the major areas of the delivery model.

Subsections of the model have been delineated to provide greater precision in its use. These subsections represent two types of tasks, three types of task items, and three levels of student performance. Considered together, these components provide information for measuring a teacher's instructional decisions, making instructional changes on a daily basis, and delivering instruction systematically. Detailed descriptions of the various components within each part of the model will be presented next.

Task Types

All instruction can be divided into two basic types of activities: reading and drill. Reading, operationally defined, means "rapid and sequential sight-word recognition with accompanying comprehension." In order to fall within the parameters of this definition, reading must be from context and for meaning. The term "drill" is used for the sake of convenience, and includes the cluster of all other kinds of assignments. Drill is defined here as anything that is not reading. Therefore, all forms of computational skill, writing and spelling activities, science, social studies, responses to teacher questions, and even the subskill areas of reading, (e.g., phonics instruction, word attack procedures, and sight word recognition) fall under the category of drill.

Task Items

Instructional delivery is basically a problem of establishing ratios. The ratios that are used in this model are based primarily upon the performances of students and less upon the particular kinds of assignments that are chosen. The ratio used is the percentage of known information divided by the percentage of unknown or "challenge" information. In looking at student performance we classify task items as representing one of three categories: known, hesitant and unknown responses. A known response is a high emission response, which means that it is emitted rapidly and correctly all the time. An unknown response is a definite error. A hesitant response represents a delay in providing a correct response or a "sometimes"; it is correct at times and incorrect at other times. The distinction between a hesitant and an unknown response is based on our observation that error responses do not generally become high emission responses during initial instruction, but instead take on the properties of being correct "sometimes" or of showing uncertainty as in a delayed response. Only after being introduced and practiced, do emerging responses generally become high emission or known items.

Both hesitant and unknown responses are represented in the delivery model as the areas of challenge, whereas high emissions indicate the area of known responses. For reading, an instructional ratio represents between 93-97 percent known items with a 3-7 percent margin of challenge. Comprehension should be approximately 75 percent or higher. For drill, the margins of challenge are increased; an instructional ratio of drill is 70-85 percent known items compared to 15-30 percent challenge. These ranges are used to provide some flexibility for making instructional choices across reading and drill activity, and also to provide a manageable set of criteria to evaluate the daily suitability of students' instructional assignments.

Performance Levels

The concepts of instructional, independent, and frustrational levels are commonly applied to reading. The terms were first introduced by Betts (1952) and were based on his observations of students' reading behaviors. He indicated that an instructional reading level represented 95 percent known running words and 75 percent comprehension. An independent level constituted 98 percent known running words and at least 90 percent comprehension, whereas 90 percent or fewer known words and comprehension at 50 percent or less was considered frustrational. He concluded that students profit most when reading materials on their instructional level, and least from materials on a frustrational level. Some performance at an independent level was also considered desirable; but under independent situations, neither the material nor the assistance of the teacher can be used to full advantage. Since the conception of these levels, the basic goal of reading has been to select materials which will not frustrate students, but will produce instructional and independent performance.

As important as reading is, an examination of teachers' behaviors shows that teachers also spend considerable time on drill related activity. In fact, drill probably constitutes the largest part of a teacher's instructional day. Because of its importance, the concepts of instructional, independent, and frustrational levels are just as significant for drill as they are for reading. For this reason teachers are frequently urged to teach at students' instructional and independent levels regardless of the task, and to start students on new assignments slightly below their levels of function as a necessary precaution against possible failure. Studies have indicated a preference for a success rate of approximately 80 percent in drill related activity in the performances of pre-school and elementary school age students (Sears & Levin, 1957; and Brophy & Evertson, 1976).

In summary, our delivery model is based on the idea of instruction as a ratio problem, meaning that every assignment, regardless of how difficult it is for a particular student, will contain a percentage of known to challenging information. If an assignment is entirely too challenging for a student, then the ratio would approach 0/100; if an assignment is far to easy, then 100/0 ratio would be demonstrated. Students' performances, however, routinely lie somewhere on a continuum between these extremes. For optimal teaching/learning conditions to occur, students' performances should conform to the ratios of known to challenging information described within the instructional level of the model. We further conclude that these instructional ratios provide a gauge for objectively measuring the effectiveness of a teachers instructional decisions. If student performance does not conform to these ratios repeatedly, then their assignment difficulty should be readjusted.

Basic Rules

Experience has shown that the application of the delivery model is facilitated by following a few basic rules. These rules are presented at this time so the reader will know what instructional considerations need to be taken into account when applying the model.

Keep the Percentage of Known Items High. It is important to determine what the smallest meaningful units of the task are, and to control the number of new units introduced, so that the ratio of known to challenging items is within an instructional level for the student. Maintaining high percentages of known items provides built-in reinforcement for the student.

Confine New Material to the Margins of Challenge. Exceeding the recommended percentages of challenge increases the probability of providing the pupil with a frustrational task, and also creates an unmanageable sequence of instruction. As mentioned before, the margin of challenge includes both unknown and hesitant responses.

Items of Undetermined Status Are Treated as Unknowns. The probability of jeopardizing an appropriate instructional ratio is increased if there are items of undetermined status within the task. Therefore, to be reasonably sure that success can occur, this type of item should be treated as an unknown response when calculating the ratio. It is especially important to do this for the student of very limited ability.

Prepare Content Before Drill. Too many times, teachers drill students on items which are unrelated to the next instructional task. By examining planned content and then designing drill work to conform to the content, the two tasks are coordinated and enhance the learning situation.

Present Drill Before Content. Drill activites are presented to the student in order to prepare her for the next task. If drill goes well, and drill and content have been coordinated, then the student should be able to perform on an instructional or independent level when content is presented.

All Tasks Are Carried to Their Logical Conclusion. No task should be left at a subskill level at the end of the day. The goal should be to take every task to its logical conclusion, which requires both independent performance and comprehension on the part of the student. Naturally, there is a concerted effort to make every task as contextual as possible.

IMPLICATIONS FOR TEACHING AND LEARNING

We hope that what you have read thus far has left you with two impressions. First, teaching is a demanding yet subjective profession. There are few hard facts available and few formulas to follow. What works for one teacher in one situation may be ineffective for another teacher in a similar situation. How teachers determine the instructional needs of their students, decide which tasks, setting, and media are appropriate, evaluate progress, provide guidance, and develop interpersonal relationships with students, is very much an individual matter in which teachers have considerable flexibility. Second, teachers control the learning environment and provide the structure for learning to occur. They take into account such things as the pupil's experience, background, interests, values, motivation, tolerances, and skills. The most troublesome variable they must control daily throughout the school year and across a myriad of assignments is task difficulty; controlling it is critical for students whose classroom performances are inadequate. It is the variable that will receive most of our attention.

Effective Teaching Procedures

The Instruction Delivery Model we recommend has three basic advantages: (1) ease of application for the teacher, (2) enhancement of teacher accountability, and (3) a basis in sound instructional principles. This model is as much an approach to delivering instruction as it is to assessment. It has been our experience that traditional assessment and consulting models lack in describing to teachers how to directly apply assessment data to teaching. As an alternative, we wish to train teachers in the use of an assessment technique that has immediate application to student work and, at the same time, helps teachers to improve the sequencing of tasks for children who are obviously not functioning well in the regular curriculum sequence.

What are the instructional principles basic to the model which provide us with the confidence to use it? Ask yourself if this type of instructional ratio system takes into account these concepts which have a bearing on student performance: prelearning preparation, motivation, modeling, active responding, guidance, practice, knowledge of results, graduated sequencing, individual differences, and classroom teaching performance (Miles and Robinson, 1970). When the model is correctly applied, each of these factors is considered with a focus on student success and teacher flexibility.

Research on the Use of the Model

The first source of information for validating the use of the model was a comparison of on-task and task-completion behavior of five learning disabled children. The children ranged in age from six to eight. All were attending a diagnostic center for educational evaluation. Each child received four different instructional treatment procedures extending over a five-week period. The procedures were randomized so that no more than two students would receive the same treatment during any given week. Two separate weeks were devoted to a "diagnostic/prescriptive procedure" which in this study was what we called the teacher's routine attempts to maintain each student at an instructional level by first assessing the student's skills and then matching material to augment those skills. During the third week a token economy procedure was used in combination with the diagnostic/prescriptive procedure. In the token economy system tangible reinforcers were used to reward appropriate on-task (study related) behavior. A controlled curriculum procedure, our instructional ratio system, was used during the fourth week. During the fifth week both the controlled curriculum approach and token economy system were used.

Observations of the performance of each of the five children across treatments were made during the same 60 minute time interval each day. Figure 1 illustrates what was observed. The plots connected by solid lines represent the mean percentages of on-task behavior; those connected by broken lines are the mean percentages of task completion.

Figure 1

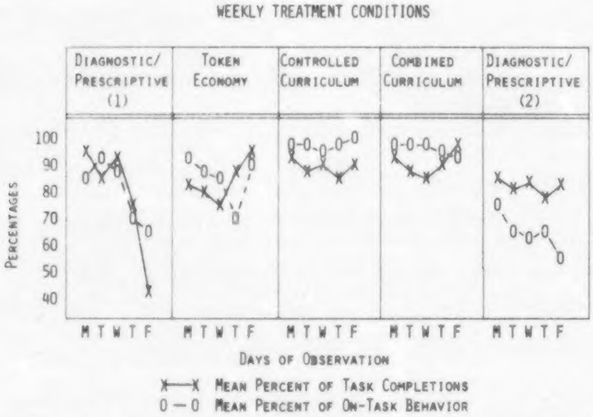


FIG. 1. MEAN PERCENTAGES OF ON-TASK AND TASK COMPLETION BEHAVIORS FOR FIVE LEARNING DISABLED CHILDREN FOR ONE HOUR PER DAY ACROSS FIVE TREATMENT CONDITIONS

Percentages of Behavior

The graph shows the highest daily mean percentage of on-task and task-completion behavior was achieved during the weeks of the controlled curriculum and the combined curriculum treatment conditions. On-task behavior during these two weeks ranged from 93 to 98 percent while task-completion rates ranged from 87 to 95 percent. The mean performances of the students during these two treatment conditions showed considerable similarity and stability. Daily mean results were consistently high across both dependent variables, whereas the degree of variation from day to day was small.

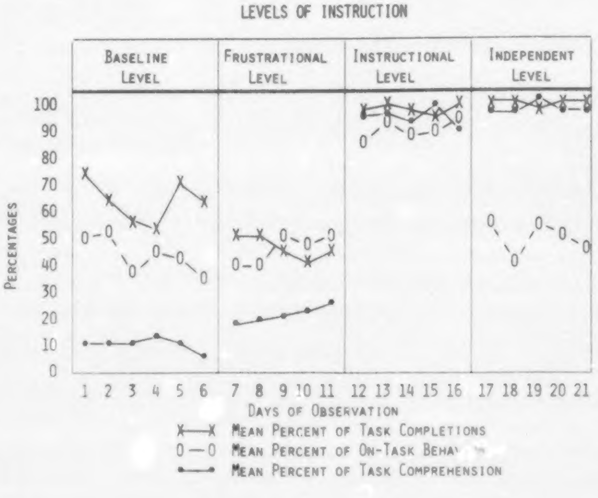
These results were in contrast to those achieved during the other treatment periods. During the two diagnostic/prescriptive conditions and the token economy condition, daily mean scores showed considerable variability. Not only did they indicate lower overall mean percentages of on-task and task-completion behaviors than the controlled curriculum and combined curriculum conditions, but they also showed more fluctuation across mean scores. For example, during the first diagnostic/prescriptive period, on-task behavior ranged from 68 to 93 percent, whereas task-completions ranged from 43 to 94 percent. For the second diagnostic/prescriptive period task completion rates were quite favorable, ranging between 83 to 89 percent; however, on-task behavior for those same sessions declined from 76 to 59 percent. Fluctuation of mean scores was also observed during the token economy condition, with task completions on on-task behaviors ranging from 77 to 93 percent and from 67 to 91 percent respectively. A further comparison of the controlled curriculum with the combined curriculum results led us to speculate that the controlled curriculum procedure was primarily responsible for the results attained during the combined treatment, not the token economy procedure.

A second source of data for evaluating the delivery model approach came from children assigned to regular first and second grade classrooms. Efforts were made to identify and work with children who were failing on their assigned school work. Of a total of 47 students participating in their regular language arts programs, eight were observed as repeatedly functioning at a frustrational level; their scores on language arts tasks consistently fell below our criteria of 70 percent known elements during drill activity and 93 percent known elements when reading. Of these students, four were first graders and four were second graders.

The eight students became the subjects of a repeated measures experiment, with each participating an equal number of days in three different treatment conditions. In these conditions the language arts assignments of each student were manipulated to reflect either the student's frustrational, instructional, or independent level of functioning. To test the overall effects of these manipulations, percentages of task-completion, task comprehension, and on-task behavior were recorded for each of the three levels. Task comprehension was measured since clues to correct responses were so readily available to the first and second graders that it was possible for them to complete various language arts tasks without really knowing "what", "how", or "why". Results can be seen in Figure 2.

Six baseline sessions verified the low levels of functioning of these eight children. Task-completions over this period ranged from 52 to 75 percent, with five of the six sessions falling below 70 percent. On-task behavior ranged between 40 and 52 percent, while task-comprehension did not exceed 15 percent. Conditions similar to baseline were continued over the next five language arts sessions. All subjects were again maintained at a frustrational level as part of the first treatment condition. During the frustration period, the percentage of comprehension rose slightly when compared to the baseline condition, but did not exceed 20 percent; on-task behavior remained about the same as baseline, or about 45 percent. The percentages of task completions, however, showed some decline compared to baseline with a maximum score of 50 percent being recorded.

Figure 2



During the second treatment condition, in which the ratio of instruction was maintained at an instructional level, student performance showed a dramatic improvement across all three behavioral dimensions. Task-completion rates averaged 96 percent over a period of five language arts sessions with the lowest single session being recorded at 92 percent. Comprehension of assigned tasks was also high during this period, ranging from 87 to 94 percent. The percentages of on-task behavior showed a range of 84 to 94 percent. Considerable stability was noted within each behavioral dimension with little variation observed across daily sessions.

Further manipulations of instructional ratios were made to provide language arts activities on an independent level of function for each student. In this third and final treatment condition, 98 percent of all tasks were completed, accompanied by 100 percent task-comprehension. On-task behavior, however, took a precipitous drop under independent conditions, averaging only 53 percent and never exceeding 60 percent during any single session. Apparently the minimal demands of the tasks had left considerable time available that could have been used to provide additional instruction.

A Basic Learning Principle (S^D-R)

Learning is often described as an S-R model, meaning that the emission of a certain response is contingent upon the presentation of a given stimulus. Of course, this represents learning in its most basic form; but at this level, the model is quite useful in helping us demonstrate a basic concept of instructional delivery. In instructional delivery, the factor which is the most important, is the "D" instead of the S-R association. Naturally, we want new S-R associations to be made; but we are also concerned with the number of new associations being required in the learning-task. Therefore, we do not refer to the S^D in the usual sense as a discriminative stimulus, but, for the purposes of delivery, view the "D" as a separate factor for consideration. It represents the number of new individual discriminations that the child is asked to make in a given task. As the number of new discriminations increases, so does task difficulty for the student. To illustrate task difficulty, choose any twelve people and ask each one to name a different word from the basic Dolch Word List. Now, call on any one of the individuals to identify the twelve words associated with each of the twelve individuals. Very few, if any, of the participants will be able to do this. The task requires the discrimination of 12 independent S-R associations. As one word after another was presented, each interfered with remembering the one before until it became extremely difficult to recall even a few correct word/person associations.

This illustrates a misuse of the Instructional Delivery Model, since there was no attempt to control the presentation of this drill type of task for the participants by providing 70 to 85 percent known items. With this in mind, can you think of a way to introduce the same words so that each new set of words approximates an appropriate instructional ratio until all 12 words are correctly identified? From this simple illustration, you can see a common type of delivery error that is made, and how instructional delivery can be improved.

Competency Testing

When the words "Competency Testing" are used, educators generally envision some procedures or method for checking to see if students have acquired various skills. The onus is on the student in terms of the degree or amount of competence he has attained. We believe that a test of competence in terms of the effectiveness of their decisions, should be made of teachers and consultative personnel as well. With so much emphasis being placed on appropriate instructional delivery as part of the function of curriculum based assessment, the next logical step is to see if you can accurately apply the concepts thus far developed. This is a way to test your competence in dealing with the concepts of curriculum based assessment, including the formation and presentation of instruction.

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SEGMENT TWO

APPLICATION OF CURRICULUM BASED ASSESSMENT

- Assumptions of Curriculum Based Assessment Applied to Reading
  - Knowledge of Reading Scope and Sequence is Necessary.
    - Basic programs
    - Teacher expectations
  - Perceptual and Processing Tasks Are Not Prerequisites to Reading Tasks.
  - Materials can be Assets or Deterents to Reading.
- Assessment Is to Be Accurate, Continuous, and Lead to Instructional Improvement.
  - Students' strengths and weaknesses
  - Testing efficiency
- Assessment Activities Should Be Directly Related to Teaching Activities.
  - Convertible data
  - Comfortable performance
  - Complementing tasks
- Use of an Instructional Delivery Model for Reading
  - Establishing Instructional Levels—Teacher Prepared Materials
    - Assessment input
    - Determining ratios of instruction

    Preparing content
    Preparing drill
    Presenting materials to student
  Participant Exercise 1
References

ASSUMPTIONS OF CURRICULUM BASED ASSESSMENT APPLIED TO READING

It is difficult to present a procedure, or to fully demonstrate its impact and application, without first discussing some of the major assumptions which distinguish this approach to assessment and instructional programming from others. The assumptions will be introduced at this time.

Knowledge of Reading Scope and Sequence is Necessary

It is assumed that evaluators who collect data and plan instruction are well versed in the scope and sequence of reading instruction in general and how it applies to the child's individual needs in particular. They must know what skills or sets of skills are being taught, the order in which they are presented and the types of adaptations which are feasible within the reading content of the child's classroom. Such knowledge is essential for the purpose of determining which specific skills have and have not been mastered.

We should mention, though, that educators are not in total agreement as to what the scope and sequence of reading should be, or for that matter, exactly what the essential subskills are for reading. This may be why there are so many variations and approaches to reading. With these limitations in mind, we would nevertheless like to present a simplified version of a reading scope and sequence. Doing this will help keep things in perspective as we discuss and demonstrate certain aspects of reading assessment and planning.

Sample Scope and Sequence

I. READINESS SKILLS FOR READING
  A. attending behavior
  B. auditory discrimination
  C. visual discrimination
  D. letter recognition and differentiation
  E. experiences with language

II. WORD RECOGNITION SKILLS
  A. whole word
  B. phonic analysis
    1. grapheme-phoneme associations
      a. consonants
      b. vowels
      c. blends
      d. digraphs
    2. sound blending
  C. structural analysis
    1. prefixes
    2. suffixes
    3. root words
    4. familiar elements
    5. syllabication
  D. content clues
  E. dictionaries and resources

III. PASSAGE READING (RAPID SEQUENTIAL WORD RECOGNITION)

IV. READING COMPREHENSION
  A. vocabulary knowledge
  B. literal meaning
  C. imagery
  D. use of context to monitor accuracy
  E. main ideas
  F. inference
  G. critical reading

V. FLUENCY OF READING

VI. READING AND STUDY SKILLS IN CONTENT AREAS

"Scope and sequence" implies that there is a logical order in which skills are to be presented and developed. In reading, however, it is probably beneficial to think of such items as a list of skills to be developed without following a particular order. If a hierarchy of presentation does exist, it is within the major skill divisions rather than across divisions. In reading, teachers naturally cut across division lines as they work simultaneously on a variety of skills. To do otherwise would fragment the reading process and delay students from becoming functional readers.

Basic Programs. An evaluator must be aware that the exact scope and sequence depends on the structure and type of reading program and curriculum used in the particular classroom. The skills and their sequence of development will be different depending on whether a phonics, linguistic, or content approach is being taught. There will also be variations in scope and sequence in different publishers' versions of these three general approaches to reading.

Teacher Expectations. Teacher's expectations also influence the scope and sequence of reading in at least two ways. First, if a resource teacher is providing supplemental services, then these services should focus on teaching those skills the child needs to acquire in order to meet the demands of his regular classroom teacher. So as not to confuse the child or create program dissonance, the resource teacher should use methods and teach skills which support his other instruction. This, of course, may limit the options and instructional choices available.

Second, the talents, curricular emphasis, and special interests of the teacher will also dictate which aspects of the reading scope and sequence are to receive the greatest weight. For example, the teacher who focuses almost exclusively on word attack and drill-related tasks will be more likely to slight the content and comprehension aspects of reading, which in a scope and sequence are equally important. A teacher who is closed to all but one method of teaching word attack, for example, would not provide suitable instruction for a child who performs best with an eclectic approach. Likewise, a teacher whose interests in reading are wide ranging, open, and free may have difficulty providing the finite choices and structure some children require to learn to read. In providing these illustrations, of course, we do not want to make value judgments about teacher personalities and instructional philosophies, but merely call your attention to the individuality of teachers and students as determinants of the scope and sequence taught.

Perceptual and Processing Tasks Are Not Prerequisites to Reading Tasks

The practitioner who believes that perceptual and processing skills form the basis from which other learning proceeds will prescribe these tasks as essential. The remediation of these skills will be carried out before the introduction of basic academic instruction. However, we do not believe that one instructional approach has to follow the other, or that perceptual and processing tasks are necessary prerequisites for generalization and acquisition of academic skill. Instead, we believe that academic skill development is quite specific and requires specific instruction.

We concur with others who believe that developing underlying abilities or psychological processes is an indirect and ineffective way to lead into reading instruction. The issue is whether this approach enhances reading readiness, since advocates of process training and the skill approach are in agreement about the need to learn basic reading skills. The two questions have been: (1) Should educators emphasize the development of underlying abilities which supposedly provide the foundation for learning and therefore facilitate the subsequent acquisition of reading skills? (2) If so, how much time should be devoted to this effort. Since we don't have an answer to the first question, the answer to the second question is not worth pursuing.

In light of the lack of evidence in support of perceptual and process training, we concur with Arter and Jenkins (1979) that there should be a moratorium on recommending materials and programs that claim to improve underlying "processing abilities", at least in their present form. We believe, as Torgesen (1979) does, that there is a need to change from a child-centered process approach in which the difficulties are identified as being within the child, to one of delineating the skills required for the performance of specific tasks in specific settings. This approach would put more emphasis on the requirements of tasks and how teachers and support personnel present tasks to students.

Materials Can Be Assets or Deterrents to Reading

Some people would argue that curriculum materials themselves are neutral in the learning process; and that it is the way materials are used by teachers that makes the difference. We agree that teachers are catalysts in the learning process but materials themselves are not neutral. We view them, instead, as being normative in as much as they do not change in and of themselves, and, therefore, demand the same performance from each student regardless of ability. Unless they are used judiciously, they can function as deterrents to the learning of particular students.

We concur that having a good variety and supply of materials on hand makes the job of teaching easier. This is especially true if among those materials is a basal reading program or two that the teacher feels confident in using. The teacher should also have access to other reading resources and take the time to select a variety of supplemental materials written at different levels of difficulty which appeal to the different reading interests of students. The availability of such resources is a real asset to the teacher, provided there is an attempt to match the material to the reading ability of the child.

When selecting materials for beginning or disabled readers, the difficulty of the material is a more important factor to consider than its interest level. It seems that the ability to evaluate whether material is interesting or not is contingent upon sufficient reading experience. If a student is functionally a non-reader, he or she has no basis on which to make a judgment, other than perhaps stating that all reading material is uninteresting. The fact is, even if a high degree of interest is shown toward reading a selection, interest soon abates as the child discovers it is too hard to read.

Trying to match materials to children and monitoring the relative success of the match is an unending process for the teacher. The process really does not seem any easier when one also realizes the variance in difficulty encountered in instructional material. In the primary grades, for example, the difference in reading difficulty among basal readers ranges from six months to two years; and in the intermediate grades, from one year to four years. With such sizable variances, it is easy to see how reading materials contribute to the problem of making a "mismatch".

Assessment is to be Accurate, Continuous, and Lead to Instructional Improvement

Assessment is not a static process unrelated to what is happening in the resource and regular classrooms. To be useful, assessment data must not only accurately reflect what a student is able to do, but also accurately predict what he or she can be expected to do. Unless we have a clear understanding of the curriculum demands placed on a child, we are likely to make discontinuous plans which will lead to erratic and fluctuating patterns of student behavior.

Accuracy is a relative term, though, especially when used to describe assessment for instructional purposes. Teachers may justifiably criticize recommendations based on general evaluations of children's overall functioning; this form of input does not address the teacher's needs, nor is it sufficiently specific to enable them to make sound instructional decisions. If evaluation is to effectively meet a teacher's needs, it should directly reflect both the skills of the student and the demands of the classroom curriculum. Data which has this type of direct relevance for teachers is appropriate, because it is both efficient and effective in terms of its immediate application for teachers.

Student's Strengths and Weaknesses. The subject of student strengths and weaknesses has produced many cliches. On one hand you hear, "Teach to the child's strengths"; on the other, "Teach to his weaknesses". And, of course, there are combination of the two such as, 'Capitalize on a child's strengths while developing her weaknesses". Investigations of exactly what strengths and weaknesses exist among learning disabled students has led to the study of such cognitive and sensory variables as verbal mediation, mental rehearsal, imagery, selective attention, impulsive/reflective thinking, and modality preferences.

We believe that information of this sort is useful to teachers if it helps them plan how to present material, for example, to a child who may possess some verbal rehearsal skill. This type of information is limited to a general presentation strategy, however, and does not provide much information on exactly what to do with each particular instructional task. For this reason, we prefer to think of a child's strengths as those known items of the task and his weaknesses as the task items which are hesitant and unknown responses. This permits us to immediately analyze each specific instructional task and adjust it so that both strengths and weaknesses are tapped in the right proportions to facilitate the child's mastery of the task.

Testing Efficiency. In curriculum based assessment, we talk about the efficiency of testing for instructional purposes only, not as it is related to identification and placement, or even global measures of grade level and progress. We also talk about the concepts of accuracy and continuous evaluation, but in a different perspective. For instruction, initial assessment data need to be sufficient to initiate teaching but not all-inclusive. We say this because of the continuous nature of the feedback system within instruction. In fact, we are not concerned when errors occur, either in terms of teacher judgments or student performance, if they do not occur too frequently; instruction is the process of constantly adjusting for error while providing some degree of task challenge for each student.

A point worth emphasizing is that instructional time is of the essence; it is not reclaimable. Yet we frequently see an inverse relationship existing between assessment and instruction. It is paradoxical that children who perform well are subjected to very little assessment so that a great amount of time is left for instruction, whereas poor performers, who need more instruction, lose much available instructional time to the onslaught of evaluators trying to identify the problem. Those who advocate this approach should be cautioned that even the best use of methods and materials may not offset the learning loss accompanying excessive evaluation. As an alternative, we recommend the following approach: "When little is known, pinpoint the knowns; when much is known, look for the unknowns." This can save a tremendous amount of time which can be then devoted to instruction.

Assessment Activities Should Be Directly Related to Teaching Activities

If assessment data cannot be converted into direct instructional decisions by the teacher, then there is serious question about their usefulness for the teacher. Likewise, if information from one learning task is not related to the next learning task, then teaching activities are not coordinated and the learning experience will be fragmented. In both cases, assessment must be focused on the content being taught, while assuring that assignments complement each other and are maintained at an instructional level for the student.

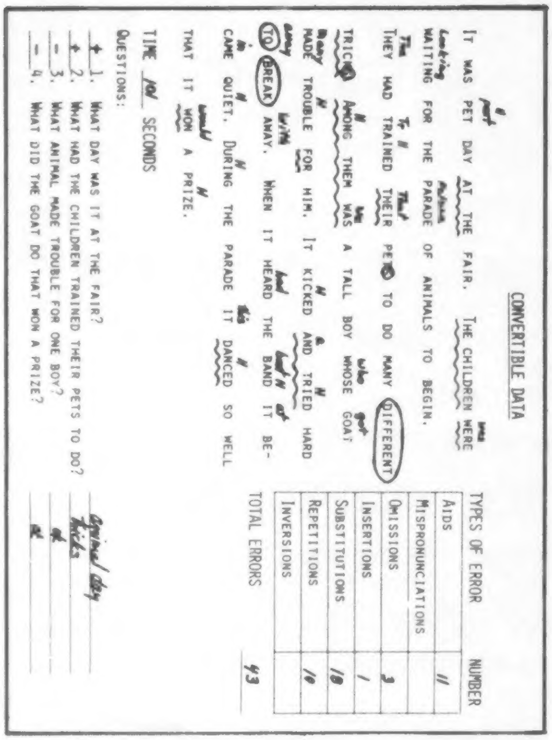
A curriculum-based orientation to assessment serves the precise function of encouraging teachers to make ongoing instructional decisions and to test these decisions continually via student performance. When they use this model teachers should be more concerned about the immediate instructional suitability of each of their decisions than about the long range measurement of student progress, since progress will take care of itself if teachers make sound instructional decisions on a daily basis. In stressing a logical flow between assessment and teaching, we have found it beneficial to identify and adhere to the following general guidelines whenever the primary purpose for assessment is curriculum based.

Convertible Data. The definition of "convertible" is the ability to change or transform. In curriculum-based assessment, this concept refers to the usefulness of assessment information for making instructional decisions and the speed with which they can be applied. If assessment information is not immediately convertible, then it is of limited instructional use. Therefore, data of a general nature, such as subtest scores from the WISC-R or ITPA, which are only indirectly related to the actual content being taught in the classroom, are not very beneficial to the teaching of basic skills. This failure to provide input which aids instructional decision making is, in fact, one of the reasons norm referenced testing is criticized. (Popham, 1974)

There is now even some question as to whether standardized achievement tests actually represent tasks which children are learning at school (Jenkins and Pany, 1978). Today, educators are no longer willing to accept achievement test scores when, for example, a student's reading performance runs counter to his achievement test scores. When test results do not agree with students performance on classroom curricula, as is true of many of them, then there is serious question about the convertibility of standard achievement test information for making instructional decisions.

The problem is not confined to achievement tests, but applies with specific diagnostic tests as well. Examine for a few minutes the following reading performance of a 16-year-old boy on a specific reading test (work sample 1).

Work Sample 1



CONVERTIBLE DATA

IT WAS PET DAY AT THE FAIR. THE CHILDREN WERE WAITING FOR THE PARADE OF ANIMALS TO BEGIN. THEY HAD TRAINED THEIR PETS TO DO MANY DIFFERENT TRICKS. AMONG THEM WAS A TALL BOY WHOSE GOAT MADE TROUBLE FOR HIM. IT KICKED AND TRIED HARD TO BREAK AWAY. WHEN IT HEARD THE BAND IT BECAME QUIET. DURING THE PARADE IT DANCED SO WELL THAT IT WON A PRIZE.

TYPES OF ERROR	NUMBER
AIDS	11
MISPRONUNCIATIONS	
OMISSIONS	3
INSERTIONS	1
SUBSTITUTIONS	18
REPETITIONS	10
INVERSIONS	
TOTAL ERRORS	43

TIME 101 SECONDS

QUESTIONS:

+ 1.	WHAT DAY WAS IT AT THE FAIR?	animal day
+ 2.	WHAT HAD THE CHILDREN TRAINED THEIR PETS TO DO?	tricks
– 3.	WHAT ANIMAL MADE TROUBLE FOR ONE BOY?	dk
– 4.	WHAT DID THE GOAT DO THAT WON A PRIZE?	dk

How convertible is this diagnostic information for making sound instructional decisions for the child in reading, even though the information is based on a specific reading assessment? It is obvious that the total number of errors is overwhelming for the student; and it is doubtful that one would be able to identify any particular reading pattern, since the student exhibits such a variety of reading errors. Neither speed nor comprehension provide much more in the form of instructional cues. He needs to be reassessed using material closer to his supposed reading level. Even when a suitable passage is found which the child can read, the evaluator is left with only a reading sample and still has the difficult task of matching it to other suitable materials, a match which is in most cases tenuous when reading scores are below the 2.5 reading level.

When the student makes many errors and is functioning at a pre-third grade level as described above, we have found the concept of knowns, hesitants, and unknowns to be very useful. By determining the status of each task item and placing it in the appropriate response category, it is possible to sequentially plan reading activities which control for the degree of success and challenge to be faced by the student. We have found this to be a good method because the data are readily accessible to teachers and the information is easy to convert into instructional decisions.

It should be reemphasized, though, that this is a *preferred option* when diagnosticians and teachers are having a difficult time locating materials which satisfy the instructional match. If a child demonstrates sufficient reading skill so that available materials can be successfully matched, then there is no need to rigorously control the ratio of known to challenging responses in each reading task. More will be said about the application of this technique as we demonstrate the preparation and use of teacher prepared material in this segment.

Comfortable Performance. In order for optimal gains in performance to occur, the student needs to be at ease with the reading task. He or she should feel confident to complete each related drill and reading task successfully. This range of "comfortableness" has been described as the student's instructional level; it is a level of difficulty which places very little stress on the student. Instead of thinking of this level as a fixed percentage for every child, however, we would rather you think of it as having a limited range of flexibility. The actual percentage of challenge per task will show some variation from one student to another contingent upon the degree of cognitive strain the student is capable of handling while still succeeding on a high percentage of tasks.

Although we find the concept of instructional level useful, it is not free from ambiguity, especially when related to performance difficulty. In a review of related literature, Harris (1979) noted:

> "The easier the reader was for the child, the more progress the child made during the year. This held for both boys and

girls, and for above average, average and below average readers. The best average gains were made by children who made fewer than 3 errors per 100 words . . . (and further more) the easier the material was in relation to the child's reading ability, the better his/her classroom behavior tended to be." (p. 137)

These findings reinforce the need for comfortable performance and suggest that when one is in doubt about what material to use, the easier material should be chosen. Apparently, it is not harmful for students to fluctuate between instructional and independent levels of reading performance; on the contrary, it is quite helpful. The low percentages of challenge coupled with active responding and practice foster reading gains.

The overriding problem in assuring a successful reading match, however, is controlling for difficulty within the material that is being selected. Capable readers will probably find few if any selections in their books that they cannot read. But for the poor reader, the variations in difficulty across the selections will pose considerable frustration even when special assistance is given by the teacher. For this type of student, a level of comfortable performance is seldom achieved.

> "Some teachers do not seem to realize how few unknown words it takes to make a selection difficult for a child and with the best of intentions, keep many children struggling with material that is unsuitably hard for them." (Harris, 1979, p. 137)

Complementing Tasks. Complementing tasks are defined as tasks that together contribute to the development of the whole, for example, instruction which is supportive of other types of instruction. In simpler terms, "Does one task help to strengthen another?" "Does a drill activity foster the development of a task, and does the task lead to a logical conclusion?" For instruction to be beneficial for the slow learner, each activity should complement the next. Unfortunately, this is not the case in much of what we call instruction. The following learning experience illustrates this point. For twenty minutes, a certain child was observed cutting and pasting Ds. There were colored Ds, corrugated cardboard Ds, cloth Ds, and sandpaper Ds. When the bell rang, the child put away his work and was told by the teacher that she would see him again tomorrow. The supervisor approached the teacher with two questions: "What is a D?" and "What is the logical conclusion of working with Ds?" The teacher was not prepared to answer.

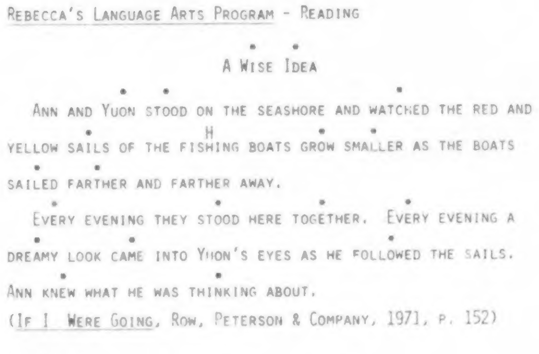
Not only are there problems in achieving complementarity in individual assignments, but also when different programs and materials are used together. Again, it is paradoxical that instruction is more complementary for the able than the slow learner. The able learner is placed in a program and taught sequentially with minimal interference from competing programs in contrast to the disabled learner who is usually exposed to a variety of instructional methods and materials. Generally, the addition of teachers and diagnosticians to remediate a slow learner's problem only compounds the lack of complementary tasks. An extreme yet timely illustration of this type of noncomplementary instruction is presented below:

> *"John was in the first grade when I met him. His speech was characterized by a noticable tongue protrusion lisp and a weak R. His grammar was characterized by such statements as "Her ain't dere." He lacked skill in rhyming and in sound-blending. He was weak in most auditory skills. His strengths consisted of an adequate visual channel, good handwriting skill, and good ability in numbers. You might be curious about his reading program.*
>
> *In the classroom John was receiving instruction in the following: A phonetic reading program in which the short vowels were introduced before the consonants; an additional and independent phonics program unrelated to the reading program; a spelling program that was phonetically based but which was unrelated to either the reading or the additional phonics program; and he was expected to watch the Electric Company program on television every noon while eating his lunch.*
>
> *John went to a remedial reading teacher for one-half hour each day. She had been carefully taught by her university never to use the same material in the remedial reading program that is used in the child's classroom. So, she was instructing him in still another phonetically based reading program and, in this one, the consonants were introduced before the vowels.*
>
> *Because John was having so much difficulty learning his sounds, he was also sent to the Title I teacher for one-half hour each day for individual instruction in phonics. She used a structured system in which all of the voiceless consonants were taught first, then the voiced or noisy consonants, next the singing consonants and, finally, the vowels.*
>
> *How well could John read by April of his first grade year? He was unable to read one word!* (Wood, 1976, p. 129-30)

The entire language arts curriculum is another place where complementary instruction is needed. After all, the basic objective of reading, spelling, and writing tasks is the same: to learn and use new words! It naturally follows, then, that reading, spelling and writing tasks can be designed so that they are supportive of each other.

How often does this happen? The tasks that most students face each day are much like those Rebecca encounters, except that Rebecca is behind the rest of her regular fourth grade classmates. In her reading (work sample 2 below) she was presented with a story which was too difficult (27 percent of the words were unknown).

Work Sample 2



Rebecca's Language Arts Program - Reading

A Wise Idea

Ann and Yuon stood on the seashore and watched the red and yellow sails of the fishing boats grow smaller as the boats sailed farther and farther away.

Every evening they stood here together. Every evening a dreamy look came into Yuon's eyes as he followed the sails. Ann knew what he was thinking about.

(If I Were Going, Row, Peterson & Company, 1971, p. 152)

• 19 Unknowns

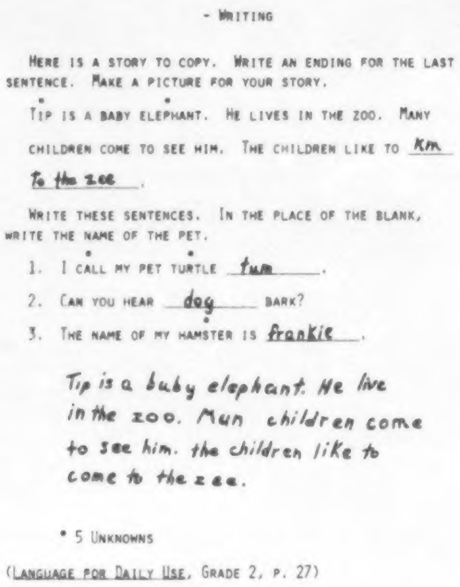
H 1 Hesitant

Unknown

wise
idea
Yvon
together
grow
followed
sailed
farther
every
sails
came
knew
thinking
stood
dreamy
smaller

Her language arts lesson (work sample 3 below) bore no relation to her previous reading task. Five words were unknown in language arts, but they were not the same unknowns that she experienced when reading about Ann and Yvon.

Work Sample 3



- WRITING

HERE IS A STORY TO COPY. WRITE AN ENDING FOR THE LAST SENTENCE. MAKE A PICTURE FOR YOUR STORY.

TIP IS A BABY ELEPHANT. HE LIVES IN THE ZOO. MANY CHILDREN COME TO SEE HIM. THE CHILDREN LIKE TO Km To the zee.

WRITE THESE SENTENCES. IN THE PLACE OF THE BLANK, WRITE THE NAME OF THE PET.

1. I CALL MY PET TURTLE tum.
2. CAN YOU HEAR dog BARK?
3. THE NAME OF MY HAMSTER IS frankie.

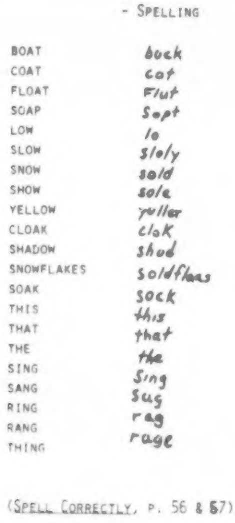
Tip is a buby elephant. He live in the zoo. Mun children come to see him. the children like to come to the zee.

• 5 UNKNOWNS

(LANGUAGE FOR DAILY USE, GRADE 2, P. 27)

Her spelling list (work sample 4 below) contains none of the unknown words that are on the reading or writing tasks. Seventeen of the 21 words were unknown.

Work Sample 4



- SPELLING

BOAT	bock
COAT	cot
FLOAT	Flut
SOAP	Sopt
LOW	lo
SLOW	sloly
SNOW	sold
SHOW	sole
YELLOW	yuller
CLOAK	clok
SHADOW	shod
SNOWFLAKES	soldflaas
SOAK	sock
THIS	this
THAT	that
THE	the
SING	Sing
SANG	Sug
RING	rag
RANG	rage
THING	

(SPELL CORRECTLY, P. 56 & 57)

In these three language arts tasks, 38 words were unknown. Not one unknown word appeared in more than one language arts task. In no way did the tasks complement each other or reinforce what Rebecca was asked to learn. They were simply separate, fragmented learning experiences.

The teacher could have programmed Rebecca's language arts lessons so they not only met the same objectives but also reinforced her learning experiences. After consultation with a resource person Rebecca's teacher identified a new story in a book and then wrote the following transitional story (work sample 5 below) for Rebecca to read.

Work Sample 5

Tommy

Tommy came to school on time. He had walked to school. On the way, he walked by a house, a horse, and an old man. At lunch, he walked to his house. "Look", a man said, "Can you play?" "Oh, no, I can't play. I am to be on time, and if I play, I can't be on time," said Tommy. After lunch, Tommy walked to school. He came to a man and a doghouse. The doghouse looked big. Tommy walked on to school to be on time. After school, he said to the man, "I can play."

Unknowns		*Knowns*	
after	a	had	oh
doghouse	am	he	old
lunch	and	his	your
Tommy	at	horse	play
walked	be	on	said
	big	I	school
	by	if	the
	house	look	time
	came	man	you
	can't	no	way

Of the 38 words in the transitional story, only five were unknown. To strengthen the use of the five words, the teacher had Rebecca use the words in sentences and in a story that she wrote at home (work sample 6 below)

Work Sample 6

Sentences done at home with word list:

1. We made a doghouse at school.
2. Tommy was walking to the store.
3. We ate fish for lunch.
4. He walked to school.
5. After lunch, the old man walked to the house.

Story created from word list:

Today I walked to school. I live on a farm. We made a doghouse. After lunch, we went home. Tommy is my friend. After school, I go to my friend's house. We play with the big horse. The old man came to your house.

It was then much easier to introduce the original story from the book about "Tommy-on-Time" (See the following work sample).

Work Sample 7

Tommy-on-Time

Tommy walked to school each day. He walked home, too. Many days Tommy didn't get to school on time. Many days he didn't get home on time.

One day his mother said, "Tommy, you are late for lunch again."

Tommy said, "I saw a man painting a little doghouse. I had to stop to see what he was doing."

After lunch Tommy didn't get back to school on time. No one was there but Miss White.

"May I go too?" asked Tommy.

"No, you can't go now," Miss White said. "You are too late. You are Tommy Too Late again."

The next day Tommy got to school on time. He got home for lunch on time. After lunch he got back to school on time too.

As Tommy walked home after school, he saw a big truck. He had to stop and look at it. It was not like the trucks Tommy had seen before. It had a house on it. The truck was going very slowly down the street.

A man was looking at the truck.

"Why is the truck going so slowly?" Tommy asked the man.

"It has a house on it," the man said.

"Where is the truck taking the house? Tommy asked. . . .

On Wings of Words, MacMillan Company, 1971.

After reading this story, a new list of words was identified. Rebecca again used the new words in her writing tasks. These writing tasks served the same purpose as the original, but were also supportive of and complementary to the reading assignment. To complete this complementary language arts sequence, the teacher used many of the same reading words as spelling words. Rebecca's new spelling score was 100%.

The four stages of the modified language arts sequence are illustrated below:

Work Sample 8

New Words

doghouse
today
after
Tommy
each
went
lunch
walked
late
was

Used Words Missed in Reading and Writing

1. I walked to school.
2. I eat lunch at school.
3. I was late for school.
4. I was after you.
5. I made a doghouse.
6. He was going to school today.
7. I went to school each day.
8. I was home today.
9. No, you can't go to Tommy's.
10. One day I went to Scotty's.
11. I walked slowly.

Work Sample 9

Written Story from Missed Reading Words

One day I was working on my doghouse. I got tired and walked home for lunch. I was late for school. He kept me after school. He said I would go home no more.

Words from Tommy-On-Time: Rebecca

1. doghouse
2. he
3. time
4. look
5. said
6. came
7. you
8. your
9. play
10. old
11. old
12. can
13. big
14. new
15. how
16. had
17. cage
18. car
19. so
20. have
21. but
22. baby
23. dress
24. marry
25. was
26. farm

In the beginning, Rebecca was presented with three unrelated tasks representing her daily language arts block. The challenge levels of each task were too high, and her performance on all three tasks demonstrated relatively poor learning. When her tasks were designed to complement one another, she experienced great success. Each new task was no longer a separate entity or a brand new challenge.

The process of coordinating tasks is fairly uncomplicated, yet its rewards can be substantial. When tasks, programs, or resource personnel strengthen and reinforce each other, the child has a better chance for success.

Use of an Instructional Delivery Model for Reading

In order not to be misunderstood and to put the use of the delivery model into perspective, we would like to make two additional points. The first is that the ratios we have recommended are suggested guidelines that can be applied to assignment selection for any student and should not be interpreted to be useful only for the poor performer. The key word is "guideline"; the model offers teachers guidelines to objectively measure the suitability of students' assignments. We are simply advocating the right of every child to experience more success than failure while still receiving a controlled percentage of challenge. The second point is that we do not want to make extra work for a teacher if he/she is already providing assignments on an instructional level of the child. We would not encourage the writing of transitional stories when suitable reading material is already available, or teacher-prepared stories when the creation of transitional stories could move the child more quickly into printed material.

Establishing Instructional Levels: Teacher Prepared Material

Whenever a teacher encounters a child with very limited reading ability, a problem is presented. The books just don't reach down low enough to be of help; and in spite of what the teacher tries, the child's reading does not progress with any degree of predictability. When existing material isn't helpful, and the teacher still believes it is imperative for the child to learn some basic reading skills, one option available to the teacher is to construct "teacher-prepared materials". In this section, we will demonstrate a technique for doing this and then conclude by asking you to construct a teacher-prepared story to familiarize yourself with the technique.

Assessment Input. As mentioned earlier, in an assessment situation where there is very little known by the student, look for what is known. In reading, this means determining the smallest complete item of each task and identifying each item as known, unknown, or hesitant. Since the smallest complete item of the reading task is a word, an assessment of the child's sight word recognition skill would be in order. Such a brief instructional assessment is illustrated in the following example (Figure 1).

Determining Ratios of Instruction. With Holly's limited sight word pool it is virtually impossible to achieve a satisfactory instructional match by using existing printed material with the child. The ratios of word challenge, or the volume of word difficulty, would overwhelm the child regardless of the reading selection chosen. She does not possess enough known responses; and what is known appears to be so fragmented that selecting the "right" story is highly improbable. But there is a base of 10 known words and 8 hesitant words with which to work.

If you follow the instructional suggestion of keeping the percentage of known items high, you can use these knowns in combination with challenging words so that the percentage of known words will be between 70 to 85 percent. After word recognition skills have improved so that the child's sight vocabulary is 100 words or more, the ratio can be figured by dividing the total number of words in the passage or story into the number of challenging responses. Remember, though, that the appropriate instructional ratios should be stable. In the

Figure 1

INSTRUCTIONAL ASSESSMENT

Name:	*Holly*
Age:	*9 years, 2 months*
Placement:	*Third grade, self contained learning disabilities classroom*

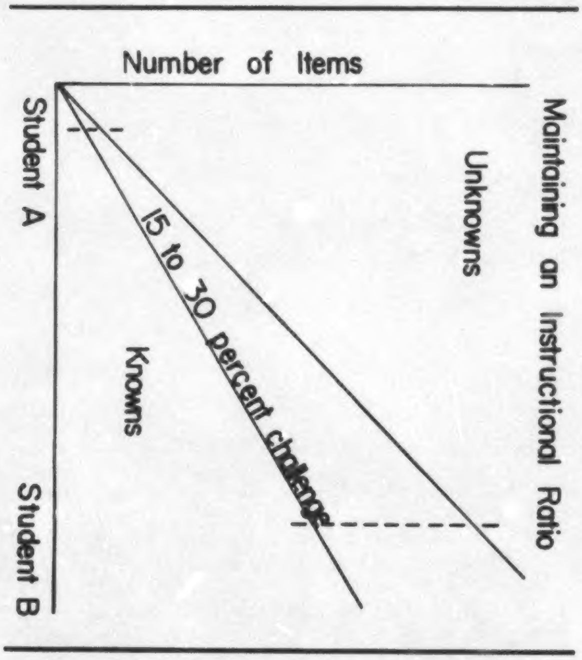
TASK ASSESSMENT

Known responses:	*one, two, three,* *red, green, purple, orange* *a, I, Holly*
Challenging responses:	
Hesitants:	*four* *blue, yellow, black* *dime, nickel, penny* *in*
Unknowns:	*(all other words)*

graph below ("Maintaining an Instructional Ratio") notice that the ratios do not change from one student to another. What changes is volume, depending on the amount of skill of the student. (See Figure 2)

We are first interested in establishing the ratio of instruction for drill. If drill is successful and complements the subsequent reading task, there will be an increased probability that an instructional reading level will also be achieved. More will be said about the relationship between drill and reading in the next segment on transitional stories.

Figure 2



Preparing Content. The following material was written for Holly (work sample 10).

TEACHER PREPARED STORY

ONE, TWO, THREE

ONE, TWO, THREE.

ONE RED BOOK.

ONE GREEN BOOK

ONE PURPLE BOOK

ONE, TWO, THREE.

UNKNOWNS
BOOK

KNOWNS
ONE, TWO,
THREE, RED,
GREEN, PURPLE

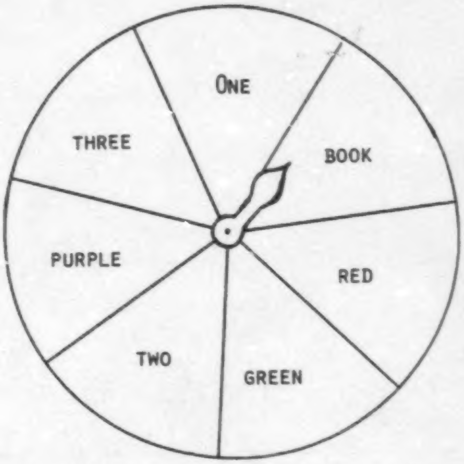
COMPREHENSION QUESTIONS:

1. ONE, ______, THREE.
2. ______ RED BOOK.
3. ONE GREEN ______.
4. ______ PURPLE BOOK.

There were six known words used in the story along with one unknown for a ratio of 85 percent known words. Using six knowns, the teacher could have included one more unknown and still remained within the 15 to 30 percent challenge range. If all ten of the knowns from the original assessment had been used, then the teacher could have used up to four unknowns. Dividing the total number of responses (14) into the number of unknown responses (4) determines the percentage of challenge (29%). Remember though, that decisions involving what words or subskills to teach, as well as the number of items of each, are based on the teacher's best educated guesses. The ratio concept merely provides an initial structure for controlling the amount of new material presented. Adjustments will have to be made as the teacher begins to test her decisions and receives feedback in the form of student performance. With Holly, for example, an initial decision to use 10 known items along with four unknowns was too difficult. With six knowns and one unknown (reinforced by pictograph) she achieved 100 percent in both reading and comprehension. Of course, the pictograph will have to be faded and the word "book" learned as a sight word as she progresses.

Preparing Drill. In drill, sandwich unknowns between knowns. Never drill just on unknown responses! Instead, maintain drill in the ratio that we have suggested. Present a few knowns, then an unknown. The unknown then becomes its own discriminative stimulus. Since correct associations have already been made for the other items, the student can now focus attention on the item or few items that need to be learned without being asked to correctly discriminate between a host of unknown responses. In Holly's case, all six knowns were presented along with the unknown word. They were presented using both flash cards and a spinner technique illustrated below.

PREPARING DRILL



Presenting Material to the Student. Once the teacher prepares the material to be read, drill exercises are presented first. How much variety and repetition are needed in drill is again a teaching decision. If, in the teacher's judgment, the drill items have been mastered, then the reading content (generally in story form) and comprehension questions are presented. During reading, we suggest that the teacher merely observe the child's performance as an indication of the suitability of her own preparation. If the teacher interrupts to provide correction, she may not see where to make adjustments for the next lesson. Of course, you can't leave a child suspended for too long, especially if the material is frustrating; but encourage as much independent function from the child as possible. If all goes well, the drill activities will complement the reading and comprehension tasks and the success rate of the students will be high.

Participant Exercise 1

Develop a teacher prepared story for Joey. Also, decide how drill work is to complement the story. His knowns have been identified for you. As far as we could determine, there was not demonstration of phonics or blending facility. His skills were limited to the recognition of 20 letters of the alphabet and these few words:

Name: Joey

Age: 9-11

Multihandicapped (physically handicapped, in a residential school for the deaf)

Knowns:

Words:	Joey	Letters:	A	M
	a		B	N
	is		C	O
	and		D	P
	car		E	R
	my		F	S
	name		G	W
	boat		H	Y
	train		I	
	airplane		J	
	has		K	
	the		L	

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SEGMENT THREE

APPLICATION OF CURRICULUM BASED ASSESSMENT

(Continued)

Using an Instructional Delivery Model for Reading
Maintaining Instructional Levels—Teacher
Transitional Stories
  A Classic Case
  Preparing Content
  Preparing Drill
  Presenting Material to Students
  Participant Exercise 2
Curriculum Based Assessment Generates Its Own Progress Measurement
  Rate of Acquistion
  Rate of Fluency
  Knowledge and Comprehension
Modification of Reading Related Assignments
  Frustrational Tasks
  Curriculum Adaptations
  Participant Exercise 3
Monitoring Progress
  Direct Observation
  Data Collection and Recording
References

USING AN INSTRUCTIONAL DELIVERY MODEL FOR READING

Within the behavioral sciences, we dare say that the teaching of reading is more an art than a science. There are no precise formulas, exact rules, or ideal conditions that can be applied to all children in exactly the same manner. Reading instruction is best described as an approximation of the child's reading needs. Typically, this means determining the child's reading level and then matching reading material which supposedly complements the level of instructional difficulty.

When you think of all the related reading assignments which go into helping a teacher accommodate the reading match for the child, though, you have some idea of the volume and scope of reading instruction and why "approximation" is an apt term for describing what actually transpires in the teaching of reading. For example, if a child successfully completes 200 reading assignments throughout the school year out of 500 assigned tasks, then his instructional needs were met approximately 60 percent of the time. Our goal is to elevate this percentage and produce assignments on which the child has a higher probabilty of succeeding so that the cumulative effect over time will come closer and closer to 100 percent. One method of doing this is to see that drill and reading assignments conform to the criteria presented in the Instructional Delivery Model before the material is ever presented to the child.

Maintaining Instructional Levels—Teacher Transitional Stories

In today's educational climate, there is a movement to emphasize the practical side of instruction and to stress its application. For reading, this has meant the use of an increasing variety of strategies for teaching the poorly performing student. The strategies include using newspapers and magazines, telephone directories, maps, television guides, want ads and advertisements, and experience stories of all sorts, and an emphasis on developing study skills. The variety of ways to present the printed word to students is limited only by the imagination.

Certainly teacher prepared materials such as experience stories and non-conventional materials such as want ads and T.V. guides can be very useful tools. But sooner or later, both the teacher and the child are faced with the prospect of reading from basals or textbooks. When this happens, particularly to the child who is not quite prepared to read from the book, the creation of teacher transition stories can help ease the child into the book while maintaining an instructional level. The following case study will show how this is done.

A Classic Case. Rick is an example of one student who faced an uphill struggle in the classroom. As an eight year old of average ability, he was expected to function on a level commensurate with his third grade classmates, but was unable to do so. Instead of engaging in meaningful classwork and peer interaction, he had developed several inappropriate behavior patterns, including showing hostility toward school work in the forms of temper outbursts, pouting episodes, verbal refusals, and physical withdrawal. He was frequently characterized as "floating about the classroom" and displaying poor study habits and lack of attention. Social adjustment problems were also a concern, since he did not get along with his peers.

These behaviors started to manifest themselves in the second grade but were insufficient to warrant special help. By the third grade, these behaviors had increased to the point that Rick was refusing to complete any assigned school work. His reading and math skills had come to a standstill at a low first grade level. He had become a learning and behavior problem for his classroom teacher and was subsequently referred to a diagnostic center for evaluation. (See Figure 1).

Because Rick deliberately avoided materials of a "textbook" nature, some assignments were chosen which merely required him to perform matching activities. In the *Michigan Tracking Program*, for example, he simply circled the correct letter or word response in a series of letters or words. Sequential reproduction of a series of letters and words was also required. A similar procedure was followed using the *Stanwick Program*. In this case, Rick was asked to discriminate between various series of basic sight vocabulary words and to make appropriate matches with stimulus words. Each task required visual discrimination, a skill he had mastered sufficiently to complete each matching exercise independent of teacher help. However, when asked to make correct oral/sight-symbol associations, as in sight-word recognition, he faltered. He demonstrated considerable task avoidance when asked to work independently on any assignments which contained reading content.

Figure 1. Assessment Input

ASSESSMENT

Name:	Rick
Age:	8 years, 3 months
Visual Acuity:	Normal
Hearing Acuity:	Normal
WISC IQ:	Normal range
WRAT:	Reading 1.4

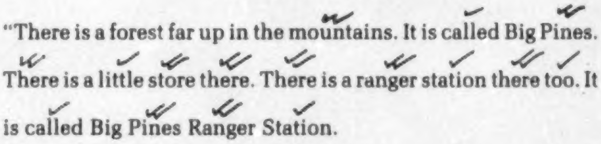
PRESCRIPTIONS

Functional Reading Level: 1.2
Recommended Use Of:
1. Michigan Tracking Program for visual training.
2. Stanwick Program for gradual introduction to basic Dolch word list.
3. Jim Forest Reading Series for high interest-low vocabulary.

In addition to the matching activities, *Jim Forest and the Bandits* was selected for Rick to read because it matched his apparent reading level and has reading appeal for older elementary students. Rick was asked to read orally the first three paragraphs. Since he experienced considerable difficulty, the assessment was stopped after the first paragraph. His performance record follows. (See work sample 1).

Work Sample 1

THE RED TRUCK



"There is a forest far up in the mountains. It is called Big Pines. There is a little store there. There is a ranger station there too. It is called Big Pines Ranger Station.

Jim lives at the ranger station. He lives with his Uncle Don. Jim's uncle is a forest ranger. A ranger's job is a big one. He looks out for the forest. He looks out for all the things that live in Big Pines. One day Jim and the ranger went into the forest. They took their horses. Star is the ranger's horse. Big Boy is Jim's horse.

Jim and Ranger Don were away all morning. At last they started back. As they came down the mountain, Jim said, "Look! You can see the ranger station from here." Ranger Don looked out over the trees. "Yes, I can see it. I can see the barn too," said Ranger Don. Then the ranger looked again. "Did you close the barn door Jim?" "Oh yes, Uncle Don. You said to close it, and I know I did" Jim said.

Rambeau, John & Nancy. *Jim Forest and the Bandits.* Field Education Publication, Inc., San Francisco, CA, 1967, p. 1-4.

The check marks indicated Rick's hesitant (✓) and unknown (✓✓) responses. Words which remained unchecked were part of his known sight-word vocabulary. Comparing the number of known to hesitant and unknown responses, one can readily see that an appropriate instructional ratio was not being maintained. In fact the percentage of challenge exceeded 27 percent as opposed to 3-7 percent recommended for an instructional level in reading. His comprehension of the paragraph was also on a frustrational level.

Preparing Content. In order to move Rick to a point where he could read *Jim Forest and the Bandits* successfully, the following steps were taken: First, a sight-word assessment list was constructed using the words in the first three paragraphs along with a small set of other words which were necessary to the context of the story. Rick was tested on the sight-word list to determine known, hesitant, and unknown responses. His word recognition skills are summarized here:

Jim Forest and The Bandits

Knowns
30 sight words from the list
of words in the back of the book

A, All, And,
At, Big

Challenges
99 Hesitant and
Unknown Words

Second, the content of each paragraph was examined in order to determine which words were known, hesitant, and unknown. We then determined the present ratio of known to challenging words for each paragraph as well as the amount of transitional work required to maintain an instructional ratio that would enable Rick to read the first paragraph, then the second, then the third, and so on.

Next, transitional stories were written to control the instructional ratio of words presented. In addition to maintaining appropriate ratios, the stories were sequenced so that challenging sight-words were introduced in the content of stories and then reviewed in later stories.

Examples of the four transitional stories with Rick's written responses to the comprehension questions of those stories follow (see work sample 2). Take the time to compare the four transitional stories with the original story (work sample 1).

The first paragraph of the original story contained 27 percent challenge for Rick, the second paragraph 18 percent challenge, and the third, 50 percent. With paragraph difficulty remaining high and sometimes increasing, it is easy to see why Rick became overwhelmed. His case is not much different from other poor readers. The pace and demands of the material kept changing. Even if he was able to struggle through the reading of one paragraph, the next would offer no reprieve from reading frustration.

Becaue of the normative nature of printed reading material it does not provide the necessary structure for the poor reader to be successful. What the child sees is what he must contend with unless the teacher modifies the existing material in some fashion. Simply cutting back on the number of paragraphs or pages to be read is not a very satisfactory solution. Instead, the material needs to be modified so that appropriate ratios of instruction can be obtained. Contrast the degree of challenge provided in the first paragraph of the original story with that in the first transitional story. Out of a total of 87 words, there were only six difficult words in the first transitional story, for a seven percent challenge rate, in contrast to the 27 percent challenge rate of the original paragraph.

By comparing the four transitional stories with the original paragraphs, you can see how the transitional stories were developed to control the instructional ratios while leading into the content of the original stories. The marking system shows the type and amount of challenge Rick was to receive in the form of reading content. It is illustrated this way for your convenience and should not be misinterpreted to be Rick's actual performance on the modified content. Figure 2 illustrates Rick's actual performance on the four transitional stories.

The left hand column of Figure 2 shows an assessment of Rick's known, hesitant, and unknown sight-words in contrast to the right hand column which shows the actual known and challenging words (hesitant and unknown responses) used in each transitional story. In comparing story 1 with story 2, for example, notice that all of the unknown words in story 1 had been learned and were included as part of the known word pool for the second story. The same thing can be seen throughout the remaining stories. Rick was learning six to seven new responses per day, remembering them, and maintaining a high level of comprehension. His progress was recorded and is graphed in Figure 3.

Work Sample 2

TRANSITION STORIES

Story 1

UNCLE DON

Uncle Don took Jim to the mountains. Uncle Don is a Forest Ranger there. He lives on top the mountain. He lives in the trees on top the mountain. He took Jim to look at all the trees in the forest. Jim looked up at all the big trees. He looked far into the forest at all the big trees.

Uncle Don took Jim to the Mountains.
Did Uncle Don live on top the mountain? yes.
He took Jim to see trees.
Is Uncle Don a Forest Ranger? yes.

Story 2

BIG PINES

There is a forest far up in the moutains. The forest is called Big Pines. There is a little store on top the mountain. A ranger lives on the mountain. He lives in a ranger station. The station is called Big Pines Ranger Station. Jim lives at the ranger station. Jim lives with his Uncle Don. Uncle Don is a Forest Ranger.

The forest is called Big Pines.
There is a little store on top the mountain.
The ranger lives in a station.
The ranger station is called Big Pines Station.
Jim lives with his uncle.

Story 3

A RANGER'S JOB

Jim lives by a little store. He lives at Big Pines Ranger Station with his Uncle Don. Jim's uncle is a Forest Ranger. A ranger's job is a big one. He looks out for all the things that live in the forest. He looks out for all the animals and trees in the forest. He took Jim up the mountain to see the animals and trees.

Jim's uncle is a Forest Ranger.
Jim lives in Big Pines forest.
Uncle Don lives with Jim.
Uncle Don took Jim to see the animals and trees.

Story 4

UP THE MOUNTAIN

Ranger Don's job is to look out for all the things that live in Big Pines. He is to look out for all the trees and animals there. One day he took Jim and went into the forest. Uncle Don and Jim took horses. Star is Uncle Don's horse. Big Boy is Jim's horse. The ranger and Jim went up the mountain on Star and Big Boy.

Did the ranger look out for the trees? yes.
Jim and the ranger took horses in the forest.
The ranger's horse is called Star.
Jim's horse is called Big Boy.

(✓) Hesitant Responses
(✓✓) Unknown Responses

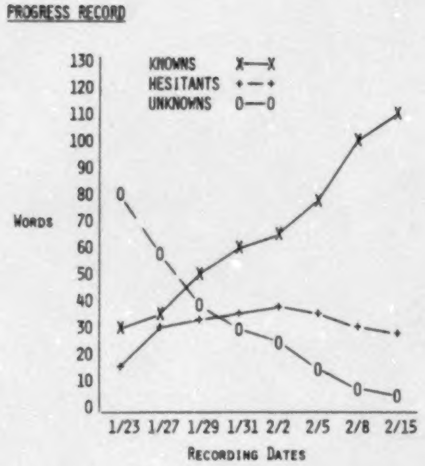
Figure 2

Sight-Word Assessment	Story 1	Story 2	Story 3	Story 4
(KNOWNS)				
a	a	a	a	
all	all		all	all
and			and	and
				*animals
at	at	at	at	at
Big	Big	Big	Big	Big
			*called	
can			can	
Don	Don	Don	Don	Don's
far	far	far		
for			for	for
forest	forest	forest	forest	forest
he	he	he	he	he
his		his	his	
I				
in	in	in	in	in
into	into			into
is	is	is	is	is
it				
Jim	Jim	Jim	Jim	Jim
				*job
			*little	
lives	lives	lives	lives	live
look	look		looks	look
		*mountain	mountain	mountain
		*on		on
one			one	one
				*out
			*Pines	Pines
		*ranger	ranger	ranger
red				
			*station	
see			see	
				*that
the	the	the	the	the
		*there		there
				*things
to	to		to	to
took	took		took	took
		*top		
trees	trees		trees	trees
Uncle	Uncle	Uncle	Uncle	Uncle
up	up	up	up	up
			*with	
you				

Sight-Word Assessment	Story 1	Story 2	Story 3	Story 4
(HESITANTS)				
called, can		called		
day				day
did, door, down	did			*did
from				
little		little		
oh				
out			out	
station		station		
			*store	
that			that	
things, too			things	
yes				
(UNKNOWNS)				
again				
			†animals	
away				
back, bandit, barn				
being				
Boy				Boy
			†by	
Cowboy				
ha, here				
horses				horses
job			job	
last, lookout, luck				
map, morning				
mountain	mountain			
	†on			
over				
Pines		Pines		
police, policeman				
ranch				
ranger	ranger			
roundup				
said				
Star, started				Star
store, storm		store		
then				
there	there			
they, thunder				
	†top			
truck				
went				went
were				
with. . . .		with		

Practice on new words from previous story.
†Words of undetermined status.

Figure 3



Out of 125 words in *Jim Forest and the Bandits*, Rick knew only thirty initially. In order for him to merge into the book without further frustration, it was necessary to control the ratio of knowns to challenge for each transitional story. The results, as illustrated in Figure 3, show that as his sight word pool increased, there was a corresponding decrease in unknowns. At the same time, there was a marked increase in the number of hesitant responses, indicating that the emergence of new responses often takes the form of hesitant and uncertain behaviors. You should note, though, that by February 5th recording, we could guardedly place Rick in the reader, provided that we look ahead in the material and drilled when appropriate. By the 8th and 15th, he was able to read the entire book while maintaining an instructional level in performance. Only eight transitional stories were required to bring Rick to the point where he could stay in the book. During the remaining teaching sessions, the ratio of knowns to challenge per page was close enough that we could provide any "hurdle help" necessary directly from the pages of the book.

Internal Consistency. In preparing transitional stories, there is a deliberate attempt to follow the original content as closely as possible. The main ideas and characterizations should remain the same. There should also be a deliberate attempt to systematically use the same challenging words, since the goal is for the child to be able to eventually read and understand the original material. Once new words are introduced to the child, there should also be efforts made to periodically review those words in both drill and in subsequent content. A review of the transitional work along with the original paragraphs presented to Rick illustrate these points.

Uses and Abuses. When using transitional stories, there are several points to consider. The first is that an assessment of the demand of the original material in relation to the child's ability should be made. Sometimes the material is so out of line with what the student is able to do that the transitional approach is inappropriate. In such a case, it would be better to choose alternative materials. The second point is that the amount of difficulty in each task should be controlled to maintain an appropriate ratio of success. Our observations agree with Miller's (1956) that seven new items (plus or minus two) is the maximum amount of challenge per assignment that should be presented to the student regardless of percentage figures. A third consideration is that spaced practice instead of massed practice should be provided with the systematic inclusion of newly mastered items into subsequent drill and story form. Do not present them one day and omit them the next. The fourth point is that comprehension should be checked; instead of oral questions, however, they should be prepared so the student can read and answer them, thus providing additional reading practice.

Preparing Drill. Remember that drill should contain a 15-30 percent margin of challenge. The remaining 70-85 percent should be only known items. As we said in the section on teacher-prepared material, each new item is to be sandwiched between known items in the preparation and presentation of drill materials. This same procedure applies whether letter recognition, word attack skills, sight words, or word usage are being taught. The amount of material to be drilled and the length of time for drill depend on the teacher's judgment of the child's skills with respect to each specific task.

Presenting Material to Students. The teaching sequence begins with the presentation of drill activities in a controlled ratio format. When you feel that drill activities have been sufficiently mastered, and that the new items learned will complement the upcoming story, it is time to present both the story and the written comprehension questions to the student. As the child reads and answers his questions, the feedback will alert you to what to do next in moving the child into the desired reader or book.

CURRICULUM BASED ASSESSMENT GENERATES ITS OWN PROGRESS MEASUREMENT

From what we have said so far, you have probably concluded that curriculum based assessment generates its own measurement. In measuring instructional progress, though, we place more emphasis on the day-to-day functioning of students than the more traditional quarterly and yearly performance measurements. Three factors which are especially important in measuring daily progress are the student's acquisition rate, fluency rate, and knowledge and comprehension.

Rate of Acquisition

The speed with which the student acquires new information, or more precisely, the number of items that he can learn and retain from each task is the rate of acquisition. Retention is the key. The child must correctly identify the items as they are presented initially and also remember them over time. In looking back you may recall that Rick was able to learn and retain six to seven new sight words per training session. This was his acquisition rate. Had he been presented with seven new items per task while retaining an average of three, then the teacher would have had to adjust the number of challenges downward, in this case not to three, but to four new items. Do not be afraid to push the child a little while assuring a 70 to 80 percent success experience in his drill related activity. For optimal learning to occur, it is important to determine the child's acquisition rate for the task and use that figure as the margin of challenge illustrated in the delivery model, especially when drilling on material and then presenting it in context.

Rate of Fluency

The ease and speed with which the child uses new and existing information after he has acquired it should be considered. For example, a baseline sample indicated that it took Rick 87 seconds to read the first 34 word paragraph in *Jim Forest and the Bandits* for a rate of 23 words per minute. After working with him and controlling his reading experiences, we saw his reading rate increase to an average of 89 words per minute on various passages of the book. His reading skill was fluctuating between an instructional and an independent level and he had become a much more fluent reader in the provided material.

Knowledge and Comprehension

Of course, drill activities designed to increase rate of acquisition and improve fluency are meaningless unless there is an accompanying increase in understanding. Knowledge and comprehension are important at all levels of reading. At fourth grade and above reading for meaning becomes extremely important; therefore, assessment of comprehension is essential and should not be taken for granted.

While the emphasis in instruction gradually changes from focusing on word attack and word knowledge to comprehension, the emphasis within comprehension also changes from the concrete or literal to higher levels of abstraction. This includes an understanding of facts, details, main ideas, characterizations, sequences, and inferences. Comprehension of reading materials requires the development of several skills: (1) an understanding of verbal language, (2) language experience and vocabulary, (3) word recognition facility, (4) visual imagery, (5) a questioning attitude toward reading material, and (6) analytical skills. The level of comprehension, like the level of difficulty of a reading selection, should be matched to the ability of the child. It is meaningless to ask a student about the sun's effects on the earth, for example, if he cannot follow a basic sequence or abstract something as simple as why the earth cools at night. In order to avoid a mismatch such as this, it is necessary to assess for understanding continually. One thing that we have learned is never to assume knowledge or comprehension but assess it on a daily basis.

MODIFICATION OF READING RELATED ASSIGNMENTS

A lot of instructional time is spent having students complete prepared worksheets, or at least attempt to complete them. Since worksheets or skillsheets are relied upon so heavily as a basic teaching tool, some explanation should be given about adjusting or modifying them to meet the criteria of an instructional level for the student. After all, our goal is to have teachers approximate an instructional level on every assignment given to students.

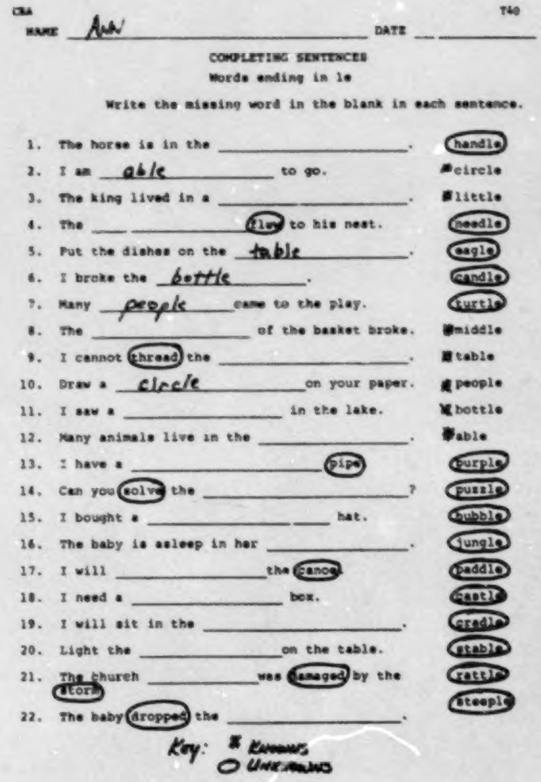
Frustrational Tasks

On the following worksheet (work sample 4) Ann responded correctly to only five of 22 items. An assessment of her ability to read the worksheet showed that many of the key words which function as content clues for the various items were unknown; and of the 22 word choices in the right hand column, only seven were known. With such low ratios of known responses, the worksheet would require an exorbitant amount of time to complete; and even then, there would be considerable guessing involved. If the teacher assisted Ann, help would have to be provided on 80 percent of the items instead of the 15 to 30 percent suggested.

Curriculum Adaptions

Changes such as those illustrated in the following worksheet (work sample 5) could have been made in order to provide Ann with a greater chance for success. Instead of using all 22 items in the original worksheet, the number can be reduced to an instructional rate. The magic marker can be a very useful tool. Mark through those responses which in your judgment make the task too difficult. Substitute words or whole items which might assist the child in arriving at the correct response. Remember, you want to control challenge, not eliminate it. Most of the unknown choices have been inked out in the right hand column, but the three that are underlined have been purposely left in, in order to provide the 30 percent challenge. Examine both the original worksheet (work sample 4) and the following modified worksheet and study the changes that occurred.

Work Sample 4



CBA T40

NAME Ann DATE ____

COMPLETING SENTENCES

Words ending in le

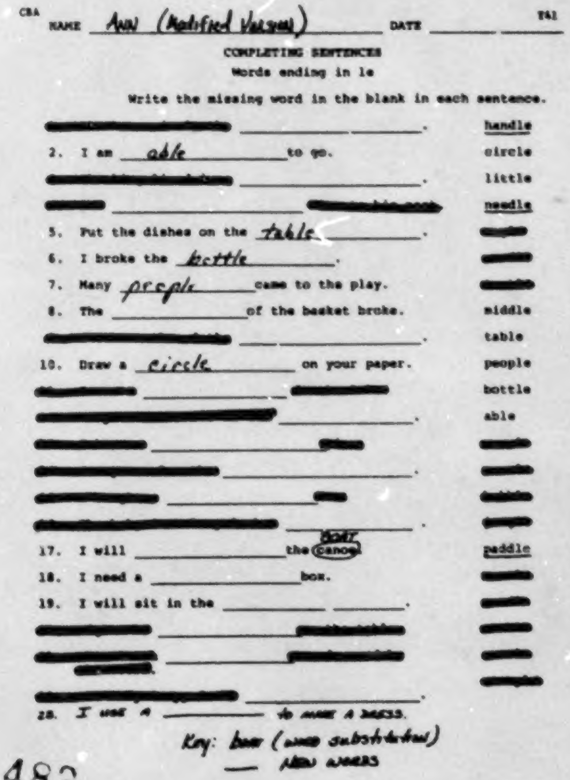
Write the missing word in the blank in each sentence.

1. The horse is in the ________.
2. I am able to go.
3. The king lived in a ________.
4. The ________ flew to his nest.
5. Put the dishes on the table.
6. I broke the bottle.
7. Many people came to the play.
8. The ________ of the basket broke.
9. I cannot thread the ________.
10. Draw a circle on your paper.
11. I saw a ________ in the lake.
12. Many animals live in the ________.
13. I have a ________ pipe.
14. Can you solve the ________?
15. I bought a ________ hat.
16. The baby is asleep in her ________.
17. I will ________ the canoe.
18. I need a ________ box.
19. I will sit in the ________.
20. Light the ________ on the table.
21. The church ________ was damaged by the storm.
22. The baby dropped the ________.

handle
*circle
*little
needle
eagle
candle
turtle
*middle
*table
*people
*bottle
*able
purple
puzzle
bubble
jungle
paddle
castle
cradle
stable
rattle
steeple

Key: * Knowns
O Unknowns

Work Sample 5



CBA T41

NAME Ann (Modified Version) DATE ____

COMPLETING SENTENCES

Words ending in le

Write the missing word in the blank in each sentence.

[redacted] ________.
2. I am able to go.
[redacted] ________.
[redacted] ________ [redacted]
5. Put the dishes on the table ________.
6. I broke the bottle.
7. Many people came to the play.
8. The ________ of the basket broke.
[redacted] ________.
10. Draw a circle on your paper.
[redacted] ________ [redacted]
[redacted] ________.
[redacted] ________ [redacted]
[redacted] ________.
[redacted] ________ [redacted]
[redacted] ________.
17. I will ________ the ~~canoe~~ boat.
18. I need a ________ box.
19. I will sit in the ________.
[redacted] ________ [redacted]
[redacted] ________ [redacted]
[redacted] ________.
28. I use a ________ to make a dress.

handle
circle
little
needle
[redacted]
middle
table
people
bottle
able
[redacted]
paddle
[redacted]

Key: box (word substitution)
— New words

Participant Exercise 3

Examine both of the following worksheets (work samples 6 and 7) and then make a decision about which one you will modify. (We believe there is sufficient assessment information to modify either task). Give the assignment some effort and produce a good product. If you wish, work with a neighbor or two, but be sure you complete it. Of course, the final indicator of the suitability of any task modification will be the child's performance. If he or she is comfortable and successful, the modification will have served its purpose. You are limited only by your imagination and the concept of what constitutes an instructional level.

Work Sample 6

Unmodified Task

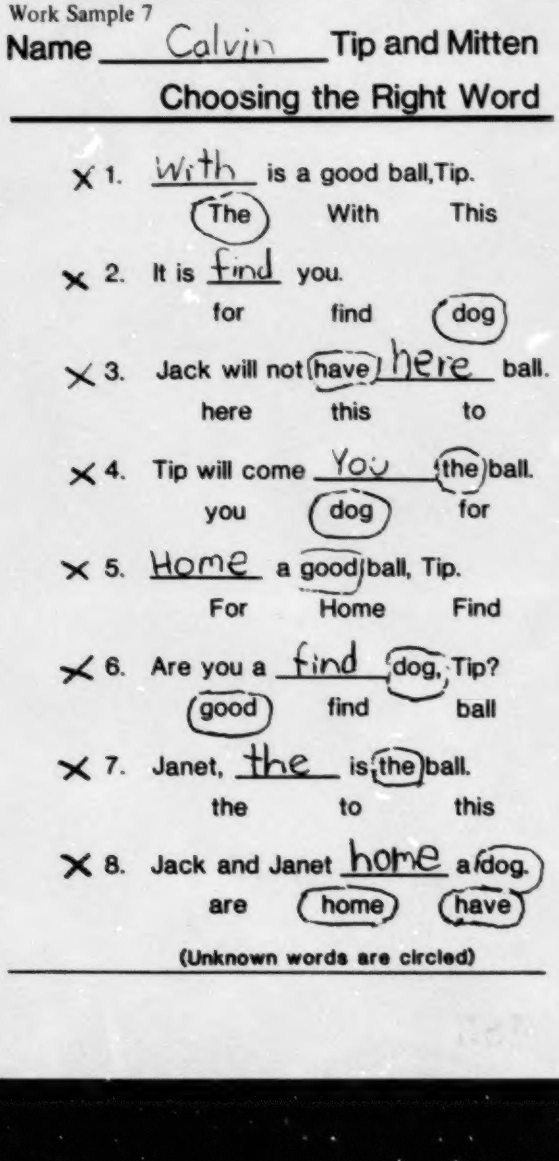
"EXPLORATION"

Pretend you are lost. You wandered away from your teacher and class while you were visiting a department store, a zoo, a museum, or a park (choose one). But you have a walkie-talkie to communicate with your teacher. Now, use the most accurate and descriptive words you can think of to describe the objects around you—which will tell the teacher where she can find you.

Sight words recognized

you, your, are, and, a, the, have, see, with, lost, & teacher

Work Sample 7



Name Calvin Tip and Mitten

Choosing the Right Word

X 1. With is a good ball,Tip.
The With This

X 2. It is find you.
for find dog

X 3. Jack will not have here ball.
here this to

X 4. Tip will come You the ball.
you dog for

X 5. Home a good ball, Tip.
For Home Find

X 6. Are you a find dog, Tip?
good find ball

X 7. Janet, the is the ball.
the to this

X 8. Jack and Janet home a dog.
are home have

(Unknown words are circled)

Monitoring Progress

The foundation of a good accountability system is an adequate baseline. Remember, it doesn't have to be all-inclusive, but it does have to be adequate for its intended purposes. Generally speaking, normative testing is not useful for determining a baseline when a child knows very little. However, as the child's skills begin to exceed third grade level in reading, normative data becomes more representative of actual ability. This is not an absolute but a general rule of thumb which we have found useful in determining a child's baseline in reading. It is to be used only as a guideline and not in preference to the observation of a well-trained evaluator.

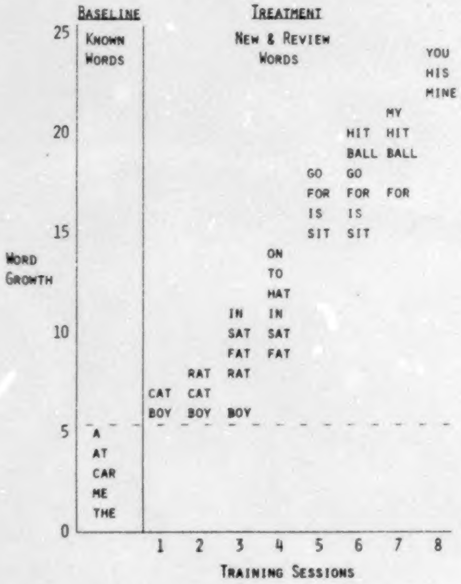
Direct Observation

We are of the opinion that direct observation provides the most meaningful information to teachers. Acquiring observational skills for aspects of curriculum permits the teacher to see immediately how a student engages in the learning task and whether or not it complements the child's individual needs. Direct observation provides the flexibility for the teacher to assess the child's performance on virtually any type of task or subtask. The teacher's questions can be as general or detailed as necessary. He or she can assess facts, concepts, judgments, and applications without the constraints of specifically sequenced test batteries. Because of these positive features, we want to become more aware of and skilled in the use of direct observation as an instructional tool. We also want data of this type to be recorded and used in the evaluation of student progress.

Data Collection and Recording

We prefer that data be collected and recorded systematically but do not have a preference about how this is to be done. The use of charts, graphs, raw scores, or converted grade level equivalents are all satisfactory techniques. When presenting a progress record for the poorly functioning student, however, non-collapsed data can provide a graphic picture of the changes that have occurred. The following example (Figure 4) provides such an illustration, showing the growth of word knowledge from baseline through eight training sessions.

Figure 4



A word bank is another device which we have found beneficial to measure progress for poorly functioning students. A word bank consists of a card file or series of manilla envelopes divided into three sections for unknown, hesitant, and known words. As words are introduced or reviewed, check marks are made on the cards: RED for unknown, GREEN for hesitant, and BLACK for known. The check marks on the fronts of the cards indicate the number of exposures to the words as well as their changing status.

As words shift in status, the cards are placed into the appropriate section in the card file or envelopes. There will come a point at which a word is assumed known and no more regular drill is necessary. Determining that point is up to the teacher's judgment, though, and may be tested further by varying the time and frequency or circumstances of exposure for any given word.

As a student grows in skill, a gradual shift from reporting raw data to using grade level equivalent scores may be in order. At that time, grade level scores would probably replace the use of charts and graphs.

REFERENCES

Miller, G. A. "The Magical Number Seven, Plus or Minus Two: Some Limits on Our Capacity for Processing Information," *The Psychological Review*, 1956, *63*:2, 81-97.

SEGMENT 4

APPLICATION OF CURRICULUM BASED ASSESSMENT—Continued

- Curriculum Based Assessment Applied to Mathematics
  - Knowledge of Mathematics Scope and Sequence
    - Readiness Skills
    - Mathematics Facts and Associative Operations
    - Applications of Quantitative Concepts and Skills
  - Common Sources of Error
    - Using Wrong Operations
    - Using Incorrect Algorithms
    - Problems in Place Value
    - Random Responses and Assumptions
    - Self-Testing Activities
    - Discussion of Self-Testing Activities
  - Basic Evaluation Techniques
    - Task Analysis
    - Product Analysis
  - Use of Instructional Delivery Model for Mathematics
    - Establishing Instructional Levels
    - Drill and Concluding Tasks
    - Task Item Selection
    - Mastering Facts
    - Assessment Input
    - Determining Ratios of Instruction
    - Preparing Concluding Tasks
    - Preparing Drill
  - Mastering Facts through Complementing Operations
    - Mastering Operations
    - Assessment Input
    - Preparing Material for Students

Curriculum Based Assessment Applied to Mathematics

The curriculum based assessment model can be applied to mathematics as well as reading. Assessment data are integrally related to the ongoing math curriculum in which the child is participating. As in reading, the purpose of the direct assessment process is to provide data which can be immediately converted into curriculum decisions, thus improving the planning and delivery of mathematics instruction to students. To make the best use of curriculum based assessment, though, both teachers and diagnosticians need to examine the sequence of math skills as well as the problem solving approaches used by students. The purpose of this fourth instructional segment is to enhance your understanding of these two broad areas.

Knowledge of Mathematics Scope and Sequence

When examining task performance in mathematics, one must be aware of such factors as readiness skills, facts and operations taught at various levels, and the application and functional use of quantitative concepts. A sample scope and sequence of mathematics skills can be found on page W-34 of this workbook. While applications are represented as a separate category, the use of procedures and concepts needs to be dealt with at all levels of math instruction.

Common Sources of Error

In addition to a basic knowledge of mathematics scope and sequence, the evaluator should be aware of common sources of error. These errors are usually discovered upon examining students' work or in observing their performance during mathematics exercises. When there are indications of poor performance, the evaluator should conduct an individual examination as to the extent of each child's errors as evidenced by faulty facts, operations, and/or problem solving strategies.

In order to enhance your direct observation skills in the area of mathematics, several categories of sources of error will be discussed throughout the training segment. It is our intent at this time to acquaint or to reacquaint you with these common sources of error, depending upon your particular knowledge base in mathematics. Each type of error will be illustrated with student work samples. At the conclusion of the illustrations, five additional samples will be presented to you as a spot check to measure your own understanding of sources of error in mathematics. With this as background, let's examine several of the errors which are commonly made by students.

Using Wrong Operations. Students who occasionally choose wrong operations to solve tasks will be able to complete assignments, but will find themselves in difficulty when they check their answers. This problem is not usually serious, though, if the teacher quickly discovers the source of error. Students may have already acquired the facts necessary to complete the operations, but have chosen, for example, to add rather than subtract. Refreshing their minds about paying attention to the sign when selecting the correct operation, contrasting the conflicting operations, and working through a problem or two may be all that is needed. Using the following examples, identify the type of operational error for each situation.

Example A—Larry

$$\begin{array}{r}7\\-3\\\hline 4\end{array}\quad\begin{array}{r}4\\+4\\\hline 0\end{array}\quad\begin{array}{r}6\\-3\\\hline 3\end{array}\quad\begin{array}{r}4\\+2\\\hline 2\end{array}\quad\begin{array}{r}7\\+3\\\hline 4\end{array}\quad\begin{array}{r}6\\-2\\\hline 4\end{array}\quad\begin{array}{r}4\\-3\\\hline 1\end{array}\quad\begin{array}{r}5\\+2\\\hline 2\end{array}$$

Identify the wrong operation

Example B—Joan

$$\begin{array}{r}7\\+2\\\hline 14\end{array}\quad\begin{array}{r}3\\+4\\\hline 12\end{array}\quad\begin{array}{r}2\\+6\\\hline 12\end{array}\quad\begin{array}{r}5\\+4\\\hline 20\end{array}\quad\begin{array}{r}7\\+8\\\hline 56\end{array}\quad\begin{array}{r}9\\+8\\\hline 72\end{array}\quad\begin{array}{r}6\\+5\\\hline 30\end{array}\quad\begin{array}{r}4\\+7\\\hline 28\end{array}$$

Identify the wrong operation

Example C—Bill

9	11	12	15	7	35	21	22
+8	+9	+41	+23	+5	+31	+4	+56
17	20	5623	3748	12	6846	25	7788

Identify the wrong operation

Using Incorrect Algorithms. Algorithms are the rules and procedures for solving mathematical problems. Many students have difficulty in mastering algorithms, and instead of following established steps, apply their own set of procedures. Before making any type of instructional recommendation, it is necessary for the evaluator to first determine where the error exists as well as the faulty procedures used by the student in problem solving. Look for patterns of error and not isolated events. Once the error has been identified and you understand what the student is doing, then begin to make instructional decisions. Using the next set of illustrations, check your own analytic skills by identifying the error pattern or strategies used by each student. Some will be obvious, while others will be obscure, testing your imagination.

Example D—Joe

3	43	1	51	82	57	26	44	21	7
+6	+6	+4	+4	+5	+4	+1	+3	+5	+20
9	13	5	10	15	14	9	11	8	9

Identify the algorithm error

Example E—Gregg

⁴14	73	³39	³16	³17	62	82	³28
× 6	× 3	× 5	× 6	× 5	× 3	× 4	× 4
102	219	204	123	103	816	238	103

Identify the algorithm error

Example F—Timmy

32	25	60	59	73	53	62	87
+21	+34	+ 4	+10	+25	+13	+15	+25
53	77	64	141				

Identify the algorithm error

Example G—John

1/4	4/5	3/4	5/8	2/4
+1/4	+3/5	+2/4	−2/8	−1/2
10	16	1	3	3

1/3 = 1/3 = 8
1/2 × 6/1 = 21
3/15 − 3/15 = 18/8
3/6 − 1/2 = 6
4/8 − 2/2 = 12/4

Identify the algorithm error

Example H—Debbie

79	14	49	74	70	608	115	512	844
− 3	− 5	−34	−28	− 8	−496	− 29	−236	−288
46	41	15	54	10	202	114	324	644

Identify the algorithm error

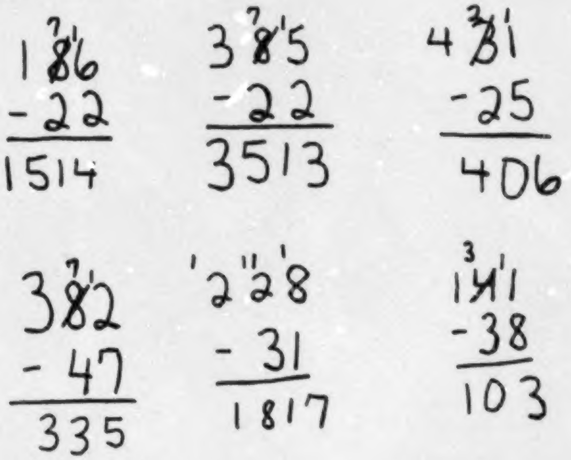
Problems in Place Value. A third source of error arises from a misunderstanding of the concept of place value. With this type of error, there is a misuse of numbers in the ones, tens, or hundreds column, with mistakes occurring in both the process and the product phases of the task. Errors of this variety can be very confusing to the student, particularly since the student understands the logic of his own problem solving strategy. Identify the errors in place value from the following examples.

Example I—Liz

85	78	74	87	33	107	47	83
+67	+27	+33	+59	+23	+21	+36	+76
1412	915	107	1316	56	128	713	159

Identify place value error

Example J – Angela

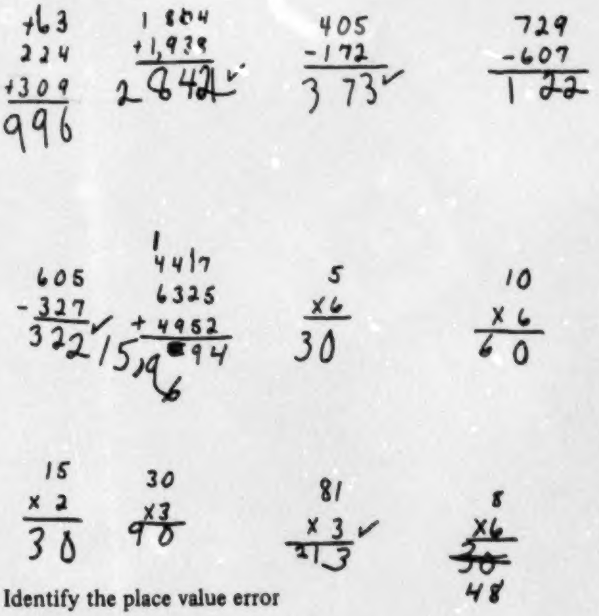


7 1	7 1	3 1
1~~8~~6	3~~8~~5	4~~3~~1
−22	−22	−25
1514	3513	406

7 1	1 11 1	3 1
3~~8~~2	228	1~~4~~1
−47	−31	−38
335	1817	103

Identify place value error

Example K – Allison



463 224 +309	1 804 +1,939	405 −172	729 −607
996	2842 ✓	3 73 ✓	1 ~~22~~

	1 4417 6325 +4952		
605 −327		5 ×6	10 ×6
322 ✓	15,~~9~~94 6	30	60

15 × 2	30 ×3	81 × 3 ✓	8 ×6
30	90	213	~~30~~ 48

Identify the place value error

Example L—Sims

$$\begin{array}{r} ^{1}38 \\ +76 \\ \hline 159 \end{array} \qquad \begin{array}{r} ^{1}92 \\ +79 \\ \hline 189 \end{array} \qquad \begin{array}{r} ^{1}35 \\ +16 \\ \hline 69 \end{array} \qquad \begin{array}{r} ^{1}38 \\ +14 \\ \hline 79 \end{array} \qquad \begin{array}{r} ^{1}26 \\ +36 \\ \hline 89 \end{array} \qquad \begin{array}{r} ^{7}28 \\ +38 \\ \hline 109 \end{array}$$

Because Sim's approach to addition was very unusual, you may need an explanation of the logic that he applied when regrouping. His method consisted of adding in the ones column to the sum of nine and carrying the difference to the tens column. For example, $\begin{array}{r} 38 \\ +76 \\ \hline \end{array}$ was processed as 8 + 1 = 9 for the ones column. Since only 1 was taken from the 6, 6 was left to carry in the tens column. His logic followed that 5 + 3 + 7 = 15 and that 15 in the tens column and 9 in the ones column totaled 159.

Random Responses and Assumptions. Occasionally, one observes a rather purposeless pattern of guessing. In this case the randomness of responses is associated with an absence of basic math facts. Random responding appears to emerge simultaneously with a breakdown of the limited repertoire of facts possessed by the student as shown below.

Example M—Mike

$$\begin{array}{r} 3 \\ +1 \\ \hline 5 \end{array} \qquad \begin{array}{r} 2 \\ +4 \\ \hline 4 \end{array} \qquad \begin{array}{r} 6 \\ +3 \\ \hline 8 \end{array}$$

$$\begin{array}{r} 2 \\ +0 \\ \hline 4 \end{array} \qquad \begin{array}{r} 0 \\ +4 \\ \hline 2 \end{array} \qquad \begin{array}{r} 3 \\ +2 \\ \hline 5 \end{array} \qquad \begin{array}{r} 0 \\ +5 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 0 \\ +4 \\ \hline 2 \end{array} \qquad \begin{array}{r} 4 \\ +3 \\ \hline 6 \end{array} \qquad \begin{array}{r} 2 \\ +1 \\ \hline 3 \end{array} \qquad \begin{array}{r} 0 \\ +3 \\ \hline 2 \end{array} \qquad \begin{array}{r} 2 \\ +2 \\ \hline 4 \end{array}$$

The error of random responses is so obvious that it is impossible for it to go undetected. Such performance is in sharp contrast to work successfully completed and handed in by another student. Experience has shown, however, that work completed does not always equate to work understood. A teacher may make the error of assuming that knowledge exists based upon a student's written work. Making this type of assumption is more a direct *teaching* error than the other errors that we have discussed so far. This form of error is illustrated by the next two examples.

As a math assignment, Leonard was asked to write his numbers from 1-100.

Example N—Leonard

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	47	56
51	52	53	53	55	56	57	58	59	70
71	72	73	73	75	76	77	78	789	80
81	82	83	83	85	86	87	88	89	90
91	92	93	93	95	96	97	98	99	100

NAME Leonard

Observational Comments

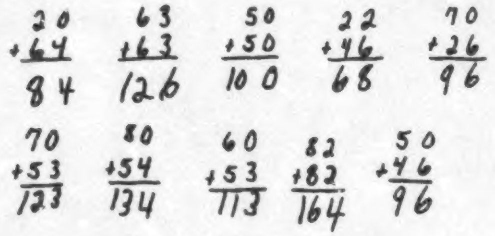
This written configuration of the numbers seems adequate, although there are obvious errors in sequencing. The repetition of certain numbers and the omission of the entire row of 60's, shows the breakdown in sequencing. At this point in his performance, however, an even more fundamental question should have been asked: Does he even know his numbers? If he did not possess adequate number recognition, how beneficial was it then to have him write the numbers in the volume required of the task? By randomly pointing to various numbers on his assignment and asking what they were, we discovered that one-to-one correspondence between the printed forms and Leonard's number recognition skills was limited to the numbers 1, 2, 3, 4, 5, 6, 7, 8, 10, 12, and 14. In other words, 89% of the task was unknown.

The assignment was inappropriate, obviously. It did not facilitate his acquisition of additional numbers but required an exorbitant amount of time to complete. With this in mind, what would you recommend as changes in this assignment for Leonard?

Example O—Sharon

There was quite a contradiction in this second grader's math performance. There were very few mistakes on math assignments that were handed in to the teacher, but when asked to work similar problems while being observed, Sharon performed much differently.

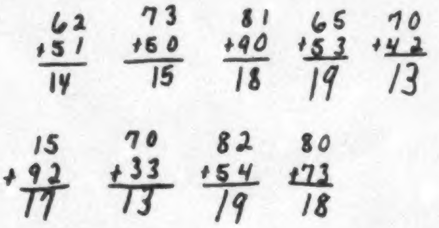
Assignments handed in:



20	63	50	22	70
+64	+63	+50	+46	+26
84	126	100	68	96

70	80	60	82	50
+53	+54	+53	+82	+46
123	134	113	164	96

Responses during direct observation



62	73	81	65	70
+51	+60	+90	+53	+42
14	15	18	19	13

15	70	82	80
+92	+33	+54	+73
17	13	19	18

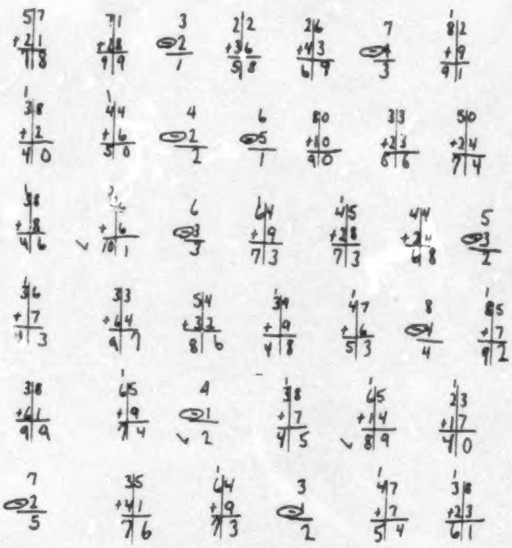
Direct observation indicated that she lacked the concepts of adding by columns and regrouping. Instead, she counted each digit cumulatively on her fingers and recorded the total as the answer. Therefore, 62 + 51 was 1 + 2 + 5 + 6 or 14. Apparently, she was certain enough that her addition strategy was incorrect to copy her responses from other students. This awareness was probably not shared by her teacher because of the large number of correct responses on assignments that had been turned in for grading. Closer observations of her performance also showed other inconsistencies. For example, when discussing the above problem, she said 51 was larger than 62, and that 14 was larger than 51. When shown a list of numbers she said that 15 was 50, 17 was 70, and 13 was 30.

Now suppose for a moment you assumed that you had figured out Sharon's logic as mentioned. What if, in reality, she had added the tens column first (7 + 5 = 12), brought the one down and carried the 2 to the ones column (2 + 3 + 0 = 5). Would she get the same answers she had gotten before? Even though you now have the same answers, you have a different instructional problem. In determining the error pattern of a child, take the time to test differing hypotheses in order to discover the actual strategy used by the student. Do not make a double error by assuming and correcting for the wrong pattern.

Self-Testing Activities

Many sources of error were illustrated in the preceding pages. In most cases, the error pattern was quite obvious. In a few others, you might have had some difficulty identifying the pattern. To provide you with additional practice, we would like for you now to analyze the five remaining samples. They are a bit more challenging and, in some cases, the sources of error overlap. Study each new illustration and identify its source(s) of error. Also comment on where you think instruction should begin for each illustration. Complete the five samples making your best educated guesses before reading on about a discussion of the cases.

Patricia



Source(s) of Error____________________________________

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Recommended Instructions_____________________________

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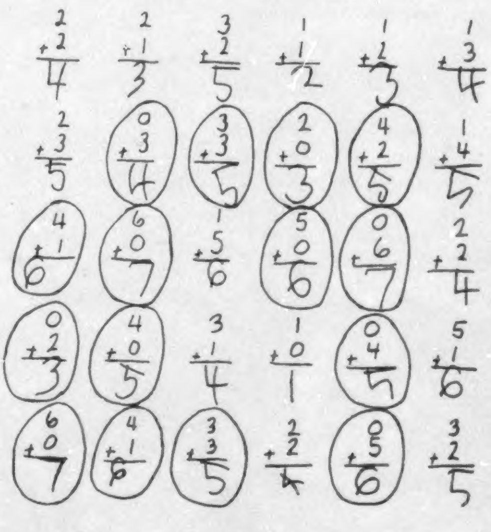
example 1

Name kathy

15/30 = 50%



2	2	3	1	1	1
+2	+1	+2	+1	+2	+3
4	3	5	2	3	4
2	0	3	2	4	1
+3	+3	+3	+0	+2	+4
5	4	5	3	5	5
4	6	1	5	0	2
+1	+0	+5	+0	+6	+2
6	7	6	6	7	4
0	4	3	1	0	5
+2	+0	+1	+0	+4	+1
3	5	4	1	5	6
6	4	3	2	0	3
+0	+1	+3	+2	+5	+2
7	6	5	4	6	5

Source(s) of Error____________________________________

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Recommended Instructions_____________________________

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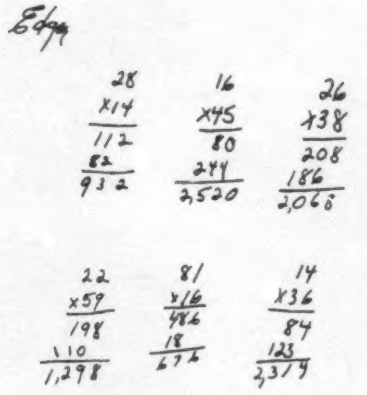
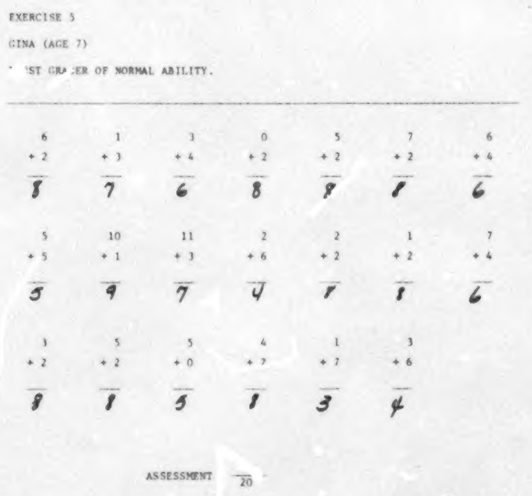
Example R – Edgar


Edgar

Source(s) of Error______________________________

Recommended Instructions______________________________


EXERCISE 5

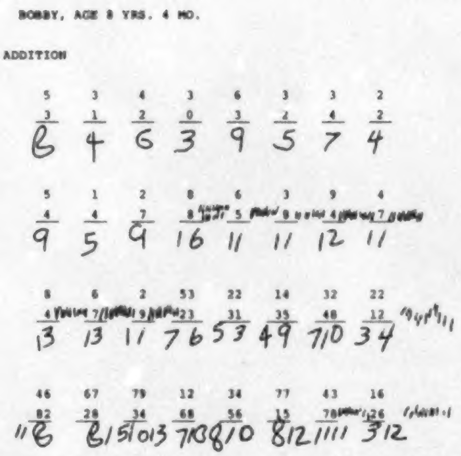
GINA (AGE 7)

ST GRADER OF NORMAL ABILITY.

ASSESSMENT /20

Source(s) of Error______________________________

Recommended Instructions______________________________


BOBBY, AGE 8 YRS. 4 MO.

ADDITION

Source(s) of Error______________________________

Recommended Instructions______________________________

Discussion of Self-Testing Activities

Patricia. The source of error for this eleven year old EMR girl was a lack of background knowledge. Since her work on two column addition with and without regrouping, along with some simple subtraction problems, was largely correct, the teacher assumed that she had full understanding of what she had done. (The circles prompted the subtraction problems, and the vertical lines prompted the addition problems). Direct observation showed that she could verbalize the operations she was using. Pushing one step further and asking about the product values, however, revealed that she did not understand most of them. For example, when we pointed to 78 and asked what it was, she replied "seven-eight", 99 was "nine-nine", 58 was "five-eight", etc. Only numbers up to 17 were accurately identified.

Kathy. This little first grader demonstrates two types of errors. First, she shows random responding when addition facts exceed the 2 + 3 range; and second, zero as an addend is consistently used as a one in the two digit problems. The teaching sequence of new facts would begin with the addends of 2 + 4, 2 + 5, 3 + 3, 3 + 4, and the mastery of the concept of zero in problems such as 0 + 1, 0 + 7. Whether she has mastered the upper combinations of the 1 + facts, would still need to be determined, i.e., 1 + 7, 1 + 8, 1 + 9, etc.

Edgar. His problem was using the wrong algorithm for multiplication. In two digit, two row problems he multiplied and regrouped correctly with the first multiplier as shown by his first sub-product scores. In formulating the second sub-product, he multiplied correctly but reversed the number placement within the subproduct, so that 36, for example, became 63. The correction is to contrast the error by using the correct algorithms, model the desired response, and practice.

Gina. This seven-year-old represents our "banana split" case. If you were able to correctly identify her source of error, you deserve a special treat for being one in a thousand. Without direct observation, in all probability, you would be at a loss in discovering her error pattern, which was primarily place value. In adding, she would start by showing all ten fingers, take the bottom addend away from the ten, then total the remaining number of fingers. Using 1 + 3 = 7 as an example, she would show ten fingers, take three fingers away, count the remaining seven, and record that value as the answer. In doing this she disregarded the remaining addend. In correcting her problem she would be taught not to start with a base of ten, but instead use only those numbers which are shown as addends in solving simple addition problems. Number recognition and counting were not a problem at this point.

Bobby. Bobby obviously over-relied on the use of prompts. His sources of error consisted of insufficient facts and place value in regrouping. As a nine-year-old, he needed to be taught a more efficient procedure for adding two larger single digits than the prompting system he was using. And, of course, he needed to be taught how to regroup from the ones to the tens column. With addition facts, his problem was one of efficiency more than one of recognition.

Basic Evaluation Techniques

In presenting these various cases, one of our intentions has been to improve your observation skills in arees of basic math. We hope you went beyond analyzing various error patterns, to formulate some instructional hypotheses. How observant were you in determining where the sequence of instruction should begin for each child? If you observe closely, the child's performance will tell you his or her sequential needs and will do so much more efficiently than pre-prepared tests or established courses of study.

While skill tests, diagnostic math tests, and achievement tests may give the evaluator an estimate of the child's current level of performance, there are other techniques in evaluation of mathematics performance better suited to a Curriculum Based Assessment model. One of these is the use of task analysis or the enumeration of the sequence of prerequisite skills necessary to complete the task(s) successfully. This demands an understanding of the structure of various skills. A second procedure is that of product analysis, which entails an examination of completed assignments, observations during performance, verbalization of procedures, and the examination of strategies used as well as an assessment of the efficiency of those strategies.

Task Analysis. This procedure is designed to determine the logical structure of a task, including its sequential steps. Task analysis is done by breaking the task down into its component parts and arranging those parts in a hierarchical order for skill development. In evaluation, task analysis is a tool which can be used for determining the areas of deficiency which lead to erroneous performance on a task. Once missing concepts, facts, or procedures are located, those essentials are taught until the task sequence is completed. Task analysis allows the teacher to plan instruction in well defined and discrete steps so that the final response will be fundamentally sound and correct. An understanding of the sequential nature of tasks as well as the development of basic skills is absolutely essential for the correct use and application of curriculum based assessment.

Product Analysis. Product analysis is the study of how a child actually arrives at an outcome. It is the analysis of the product and the way the child produced the product that is important. We prefer the use of this term to other descriptive terms, such as learning styles, cognitive strategies, and diagnosis and prescription, because of its focus. In the past, these other terms have been paired with particular meanings. For example, the term "learning styles" has frequently been used to mean modality preferences; "cognitive strategies" has been associated with selective attention, part vs. whole learning, and impulsive vs. reflective thinking; and "diagnostic and prescriptive teaching" basically reflected right vs. wrong responses. We realize, of course, that this is an over-simplification of some very important learning concepts and approaches, and that it does not do justice to their dimensions of study or application. However, we feel that the use of product analysis would incorporate these various factors when appropriate but not be limited to them.

We see product analysis as a direct assessment approach based on what the child has done and is doing in the classroom curriculum. It provides an analysis of the process the child uses to arrive at each answer, while gradually introducing behavior change by shaping of the necessary strategies. Product analysis is not a single operation but a set of informal techniques involving the examination of completed assignments, observations of the child's work patterns, interviews regarding responses, and assessment of the suitability and ease of student performance. These four informal procedures are discussed next.

In many cases it is possible to determine the error patterns by merely *examining completed responses*. Most of the error patterns which have been presented in this math segment can be determined in this way. Examining the work completed often allows us to determine a student's known information as well as those facts, concepts, and procedures which are unknown. It is important to look for inconsistencies in expected performance as well as patterns of error which lead to faulty generalization about problem solving. It may also be necessary to develop personal hypotheses about the error the child is making and then test those hypotheses.

Occasionally, the analysis of work completed will not be sufficient to discover how the child has arrived at certain responses. True, there may be clues in written work showing impulsive and random responses, or even definite indications of a lack of understanding and frustration; but such factors merely add distress to the situation. Sometimes the production strategy used by the child is so obscure that the teacher or evaluator can not decipher the pattern by analyzing the work samples. When this happens, it is necessary to *observe the work situation* and see exactly what the child does. Direct observation may reveal the actual process used by the student in generating the product, as well as the particular compensatory strategies used by the student.

If the answer is still unknown after a period of direct observation, an interview technique which requests the child to verbalize his approach can be used. The child is asked to think aloud while he does the task. The evaluator may still have to use a good deal of imagination in deciding exactly what it is that the child has explained, but the combination of the child's verbal responses and direct observation will probably provide a sufficient number of pieces of information to unlock the puzzle.

Another objective of product analysis is to determine whether the child uses efficient strategies. Often a child is able to arrive at correct responses even though he or she may take excessive time and effort. Consequently, the method used to obtain the answer is ignored by the teacher. While the child may demonstrate some degree of understanding basic facts and concepts, such inefficiency uses too much time and energy and leads to incomplete and missed assignments and failure to keep pace.

Exactly how the techniques of product analysis apply to evaluation and direct instruction will be discussed in the next training segment. Once again, they will be demonstrated through examining student work. Although the emphasis will be on instructional decisions made from assessment data, you should be aware of how these informal techniques apply to various situations and contribute to the input process.

USE OF AN INSTRUCTIONAL DELIVERY MODEL FOR MATHEMATICS

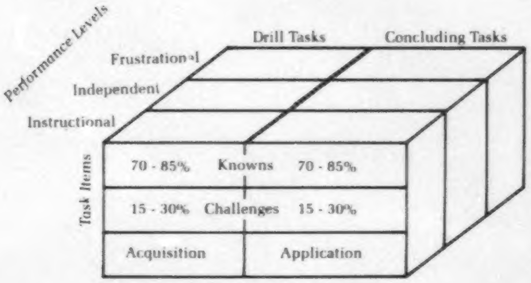
Now we change our focus from one of identifying error patterns to one of instructional planning and delivery. Product analysis and its uses will continue to be stressed; but this time, analyses of rather unusual work samples will suffice as illustrations. The prime objective of this section will be to teach you how to convert information regarding insufficient facts, faulty concepts, and procedural errors into sound instructional decisions which help the child overcome math problems. In essence, we will show you how to establish and maintain math assignments at an instructional level.

Establishing Instructional Levels

In teaching math, as in reading, our basic goal is to provide students with assignments on an instructional level. The rule is simply to keep the number of known items high in contrast with the number of challenging items for each student assignment. The criteria which are recommended in the Instructional Delivery Model for accomplishing this consist of maintaining a range of 70-85 percent known items in comparison to 15-30 percent challenging items. To obtain a more optimal ratio of known to challenging items for each specific student would require further adjustment in the percentages of known to challenging responses. Whether a ratio of 70/30, 85/15, or even 90/10 would be warranted depends on the evaluator's judgment of how much cognitive strain the student could handle.

INSTRUCTIONAL DELIVERY MODEL

-MATH-



Drill and Concluding Tasks

Math also has its drill and concluding tasks. The recommended percentages for student success remain the same for both types of tasks in the model, but there is a definite distinction between the two in terms of their scope of activity. For example, a teacher will generally take the instructional time to introduce new math facts as well as explain the algorithmic steps in a new operation to students, drilling on single items until she or he believes the students have achieved some degree of item mastery. Eventually, however, students will be provided with a series of problems, e.g. an assigned page in a math book, a commercial worksheet, or a ditto sheet to complete. In other words, students are ultimately assigned tasks which are separate from their drill activities, tasks which they are asked to complete primarily on their own.

We see the primary function of drill as being the presentation and acquisition of new information. This function serves to help students acquire knowledge of the basic symbols, facts, algorithms, and operations involved in math. It also permits an assessment of the student's rate of acquisition, meaning the number of new items the student is able to learn and retain during each separate teaching episode. The concluding task, however, is designed to answer the question of whether or not the student accurately applies what he or she has learned. When we use concluding tasks we are concerned with the student's ability to work math problems independently, to use correct problem solving procedures, and to work fluently.

If there is coordination between drill and concluding tasks, and if the process of drill followed by the concluding task is used appropriately, the student's performance on the latter should provide feedback to the teacher concerning the suitability of the drill experience. Whenever inconsistencies in student performance are noted, either due to the lack of coordination of tasks or the teacher's presentation, adjustments can be made. To minimize problems which might arise between drill and concluding tasks we have found it helpful to follow these steps: (1) determine the instructional need, (2) prepare the concluding task, (3) design drill activities which syncronize with the concluding task, (4) present the drill activities to the student and finally, (5) present the concluding task as a measure of student application.

Task Item Selection

If math success is to be achieved the selection of task items must be done on a systematic rather than a random basis. Item selection should provide a controlled sequence of challenge along with a sufficient number of correct responses to make the overall task reinforcing. This is seldom accomplished when math problems are merely assigned from a book. When assignments are made in this manner, the teacher can anticipate spending a disproportionate amount of remedial effort with the student. We say this because of the normative nature of pre-prepared assignments. Printed assignments, like those in math books, adhere to a general sequential order; but the choice and arrangement of problems often represents a random scatter as seen through the eyes of the student. One thing which makes this type of assignment selection precarious is the rather non-sequential learning of inadequate students. Their learning patterns generally represent a series of fact and process fragments. An understanding of the exact nature of such fragments, accompanied by well chosen task items to fill the existing gaps, allows the teacher to provide the structure needed for the student to develop some sense of math mastery.

Mastering Facts

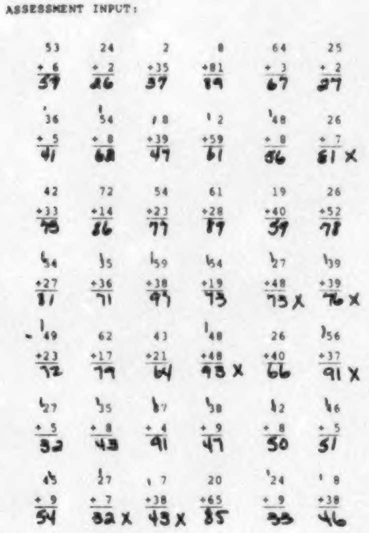
In determining instructional levels in math, there are two things to weigh: (1) the completeness of the student's facts systems, and (2) the intactness of his operations. When the primary problem is that facts are insufficient, the instructional decision includes determining where the gaps are and then gradually introducing the new facts in combination with those previously mastered in an appropriate ratio of knowns to unknowns. If the problem is one of overcoming faulty operations, then the ratio system is of secondary concern. The emphasis must be placed upon correcting the deficiency in the operation. Of course, math mastery does not permit a divorce of operations from facts; the two are combined and must be presented together, but the emphasis must be upon isolating and remediating the operational error as opposed to acquiring greater fact facility.

With the preceding information as background, we now want to provide you with our impressions of what to do when the primary problem is an inadequate supply of facts. We will be using a case study approach to illustrate the various decision points associated with this type of error. We will also demonstrate how to select and present math facts in accordance with the criteria established in the Instructional Delivery Model. As each illustration is developed, ask yourself if the sequential needs of the child were established and whether or not drill and a concluding task were incorporated in the instructional planning.

Assessment Input

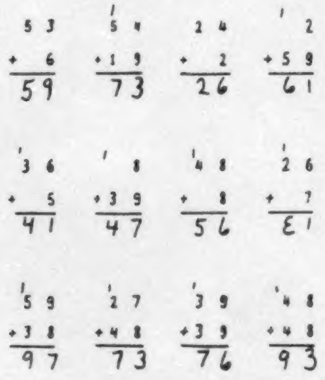
Bill is eight years old and in the third grade. He appears to have above average intelligence but has been referred to a resource program for special instruction in social skills, reading, and math. An examination of a recently completed math assignment showed 1) that he successfully completed 35 out of 42 responses for a rate of 83%, and 2) that he understood and used the process of regrouping in addition correctly. A closer analysis of his errors, however, soon revealed that we couldn't determine exactly how he arrived at certain answers, but perhaps you can. Take a few minutes and do a product analysis. Make some hypotheses about his patterns of error.

Work Sample 1


ASSESSMENT INPUT:

Do you feel you have enough information to proceed with instruction or is more required? You probably agree that additional direct observation of the learning situation is in order. In Bill's case it was necessary to watch while he actually worked math problems in order to determine how he produced various responses. Since we no longer have access to the child, a few minutes will be spent describing the strategies he used in producing his answers. Examine the following assignment:

Work Sample 2



In general, Bill tried to add all problems in his head. He understood right to left progression and had no difficulty with the concept of regrouping. His problem was with addition facts and not with its operations. In two row - two column addition, his basic strategy consisted of taking the largest addend first and then adding the second one to it regardless of its top or bottom position. Therefore, he understood commutative properties.

Other observations showed that he sped through the first row of problems without any difficulty. However, on the first problem in the second row, 36 + 5, he showed some hesitation, followed by a two minute delay in completing the next problem, 8 + 39. He worked the third problem quickly and also the fourth; but in the fourth problem, the answer was an incorrect 1. In the third row, he made errors on three of the four problems.

With this additional information, do you think you understand his production processes enough to proceed with the actual selection of addition items? We hope you said, "probably not" and are asking yourself why it took two minutse to complete one problem. Not being able to figure out why ourselves, we used the product analysis technique of asking him. We asked, "Bill, your answer to 8 + 39 = 47 was correct, but could you tell us how you got it?" He replied that he "took five." In other words, he could not add eight units to the nine which already existed in his head. Finally, it dawned on him that he could take 9 + (5 + 3) and get 17, carry the one, and complete the problem. And what about 26 + 7 = 1? If you know how he answered this problem, then you can tell why 27 + 48 = 73 and 39 + 37 = 76 were answered as they were. The answer was simple, once he told us. He said that seven plus seven equalled twelve.

Determining Ratios of Instruction

Once we understood how Bill arrived at his various answers, it was possible to begin remedial planning. Before the principles used in the Instructional Delivery Model could be applied, there was still the problem of where to begin the instructional sequence. Should it start where the boy would experience a high level of success and then gradually increase in difficulty? Bill had already achieved an 83 percent score without any special help. As important as success is, progress is basically made via new experiences which challenge the learner. The instructional sequence to which we are referring should only represent the area of challenge, or the area of hesitant and unknown responses. The employment of the model merely permits the control of the amount of challenge in proportion to the amount of known information to be delivered to the students.

What is the sequence of challenge suitable for Bill? Where does his problem with addition facts begin, and what is the range of addition facts that needs to be developed? Looking back, do you remember that he first began to show some hesitations when both of the addends were five or greater? He obviously did not know six plus six or seven plus seven, etc. Interpreting his behavior, we would say that the sums which created difficulty for Bill were from 10 to 18 when both addends were five or greater. And even though he demonstrated some facility with the use of fives, the five factors should be strengthened.

How long it will take Bill to master the remaining facts which fall within the parameters that were just defined is unknown. This will depend on establishing his acquisition rate and then maintaining an amount of challenge which complements that rate. To begin this process, the evaluator or teacher must make an educated guess about the actual number of challenging items within the instructional sequence that he or she wants to introduce during the initial instruction. Once these are decided, a series of known facts are selected to be included as part of training. The teacher endeavors to keep the two types of problems within a ratio which favors success—a ratio between 70 to 85 percent known facts and 15 to 30 percent challenge.

Preparing Concluding Tasks

It would not have served a useful purpose to include math problems which spanned Bill's entire range of need. This would have been self-defeating and similar to the insensitive nature of commercial assignments. What needed to be done was to control systematically the item selection based upon the child's sequential needs. In Bill's case it was decided to restrict the number of challenging facts to those summing to 14 or less. This gave the following math fact combinations:

$5 + 5$ = 10

$5 + 6$ $6 + 5$ = 11

$5 + 7$ $6 + 6$ $7 + 5$ = 12

$5 + 8$ $6 + 7$ $7 + 6$ $8 + 5$ = 13

$5 + 9$ $6 + 8$ $7 + 7$ $8 + 6$ $9 + 5$ = 14

Of these facts, remember only four are considered unknown, 6 + 6, 7 + 6, 8 + 6, and 7 + 7. All of the other facts use a 5 as one of the addends, and therefore at the very most could only be considered hesitant responses. This included even 5 + 5. In all probability, Bill knew this math fact; but since it wasn't on the original worksheet, it should be checked. Because he always added the largest number first, the alternating positions of the number, for example, 5 + 6 and 6 + 5, were not included since he was already using the principle of commutative properties.

With the challenging facts established, we were now ready to develop a concluding task. Since time permitted, the materials were individually prepared by the evaluator to reflect both the desired instructional sequence and the ratio of difficulty. The task contained all of the problems which were to be presented to Bill. Examine the teacher prepared task for a few moments.

Work Sample 3

$53 + 6$	$64 + 13$	$2 + 59$	$\enclose{circle}{45 + 35}$	$62 + 17$	$76 + 14$	$\enclose{circle}{36 + 5}$
$54 + 8$	$\enclose{circle}{27 + 27}$	$72 + 14$	$87 + 4$	$\enclose{circle}{27 + 55}$	$63 + 35$	$54 + 44$
$19 + 53$	$\enclose{circle}{76 + 16}$	$43 + 37$	$66 + 24$	$54 + 27$	$49 + 53$	$\enclose{circle}{35 + 28}$
$\enclose{circle}{56 + 37}$	$54 + 19$	$28 + 53$	$69 + 22$	$42 + 68$	$55 + 34$	$44 + 44$
$\enclose{circle}{16 + 45}$	$\enclose{circle}{55 + 53}$	$47 + 33$	$88 + 14$	$\enclose{circle}{45 + 39}$	$\enclose{circle}{38 + 26}$	$29 + 53$

In this task, each new fact in the desired sequence was circled. All other facts were known. The ratio of knowns to challenging items was 72 to 28 percent. The circles were provided for two reasons: (1) to focus the attention of the student on specific problems, and (2) to direct the teacher to the problems of concern. Have you ever stopped to consider why a teacher needs to correct every problem, especially when 70 percent of them are known? What an inefficient use of valuable instructional time!

Another time saving device is for the teacher to modify the student's existing work in preference to constructing it. This type of curriculum modification permits the teacher to incorporate the instructional sequence of the child; the one drawback to this approach, however, is that not all of the pertinent facts may be included. In the example below, note those facts which have been omitted or crossed out because they were out of sequence; also note those facts which were missing from the proposed sequence.

Work Sample 4

$53 + 6$	$24 + 2$	$2 + 35$	$8 + 81$	$64 + 3$	$25 + 2$
$\enclose{circle}{36 + 5}$	$54 + 8$	$\cancel{6 + 79}$	$2 + 59$	$\cancel{48 + 8}$	$\enclose{circle}{26 + 7}$
$42 + 33$	$72 + 14$	$54 + 23$	$61 + 28$	$19 + 40$	$26 + 52$
$54 + 27$	$\enclose{circle}{35 + 36}$	$\cancel{59 + 38}$	$54 + 19$	$\cancel{27 + 48}$	$\cancel{39 + 39}$
$49 + 23$	$62 + 17$	$43 + 21$	$\cancel{48 + 48}$	$26 + 40$	$\enclose{circle}{56 + 37}$
$\enclose{circle}{27 + 5}$	$\enclose{circle}{35 + 8}$	$87 + 4$	$\cancel{38 + 9}$	$42 + 8$	$\enclose{circle}{46 + 5}$
$\enclose{circle}{45 + 9}$	$\enclose{circle}{27 + 7}$	$\cancel{7 + 28}$	$20 + 65$	$24 + 9$	$\cancel{8 + 38}$

Preparing Drill

When drilling on math facts, do not introduce unknowns only. As mentioned before, you will have more success if new facts are sandwiched in among known facts. The actual number of new facts to be introduced in drill will depend on the student's rate of acquisition. For example, if a student fails to learn even one new fact per day, it would be futile to attempt to teach him several during one sitting. For this type of student, you would probably try to introduce one to two new facts along with four or five which are known. The number of new facts would naturally be increased for the more capable student; but even then, you would want to limit the combination of challenging and known items to around 20 to 25 responses.

Once the student has learned a series of facts, it may be beneficial also to provide drill to improve his rate of fluency. To accomplish this, a precision teaching approach is helpful. A sheet of simple facts is presented to the student to be worked in a brief time. If you are not familiar with this type of timed procedure, we would like to illustrate it for you, using Bill once again as an example. Remember that he showed some hesitation on problems with addends of five. Short, timed drill work should help to make him more fluent in the use of the five facts.

$0 + 5$	$6 + 5$	$5 + 5$	$7 + 5$	$3 + 5$	$9 + 5$	$4 + 5$	$8 + 5$	$6 + 5$	$1 + 5$
$9 + 5$	$3 + 5$	$7 + 5$	$2 + 5$	$0 + 5$	$4 + 5$	$8 + 5$	$1 + 5$	$5 + 5$	$6 + 5$

After being satisfied that the drill activities have accomplished their purpose, the concluding task is presented to the student. This task encourages the child to use his or her newly obtained facts as well as complete the required math operations as a measure of direct application. For Bill, this meant presenting a series of two row, two column addition problems whose ones column did not exceed a sum of 14. The correctness and efficiency of his work will provide feedback concerning the appropriateness of the sequencing and drill decisions. Any difficulties observed at this point signal the need for adjustments to be made prior to the next teaching session.

Mastering Facts Through Complementing Operations

Periodically, there is a student who has not been able to master the steps required for a certain mathematical operation. Teachers may have tried repeatedly to help overcome this deficiency by providing an assortment of drill and assigned activities to little avail. Additional repetition does not seem to help, but, instead, appears to aggravate the problem. He no longer shows the interest or concentration to master the remaining facts. The teacher is faced with the student's admission that he hates, for example, multiplication.

Occasionally, problems of this sort are also of the teacher's making. The teacher may become so regimented in demanding that a certain level of mastery or speed be achieved in using facts that he or she actually impedes the child's progress throughout the math curriculum. When this happens, it is generally accompanied by student task avoidance and careless errors. Advancing the student to the next operation may rekindle his motivation to learn something new while also bringing his level of work closer to that of his classmates.

Road blocks of this type can be dealt with by reassessing the instructional situation and by looking for ways to complement the child's learning. There are ways of mutually accomplishing such a purpose. Since math is cumulative, meaning that the facts and concepts of one operation are used in preparation for the next, it is possible to move to the next operation and to use that stage in helping to remediate deficiency within a preceding operation. To accomplish this, care must be taken to ensure that the student understands the concepts and procedural steps of the new operation. Careful consideration must also be given to the selection of specific problems to ensure that the student functions successfully within the new task while gradually acquiring the deficient facts from a former operation.

Participant Worksheet

A junior high school student named Larry had the problem we have been referring to. His progress was blocked because he had not been able to master his multiplication facts. When asked if he would like to proceed to division, there was an immediate positive response. When some very simple division problems were presented, it was obvious that Larry understood the division process, and that it was not necessary to teach him the procedural steps. However, because of an incomplete repertoire of multiplication facts, division would also pose some serious problems. To understand his limitations examine the scope of his multiplication facts (on workbook page W-53). Convert these facts into their division complements, for example, 3 × 6 complements 18 ÷ 3. Decide on a sequence of multiplication facts you wish to teach. Finally, using the *instructional ratio* concept, design a division lesson of 15 to 20 problems containing both the known multiplication facts and the sequence of deficient facts that you will be presenting in division form. Analyze and compare your results with those provided in the appendix.

Mastering Operations

In order for a student to function successfully in math, it is essential that she master the basic operations of addition, subtraction, multiplication, and division. She must understand the basic concepts of each operation and be able to apply the appropriate algorithms. Within the developmental sequence of mathematics, the introduction of an operation is consistently accompanied by the introduction of a series of facts pertinent to the operation. Occasionally, though, the situation arises where the student is able to conceptualize and recall a sufficient number of facts within a process, yet manifests difficulty in mastering the operation. The student either confuses the algorithmic order of the steps or has an insufficient conceptualization of what is involved.

The mastery of a new operation, or the ability to overcome problems of a previously presented operation, are goals of teaching which are distinctively different from the mastery of facts. Facts are conceptually easier to learn, and possess cumulative properties. Operations are conceptually more difficult to acquire because of the procedural steps involved; but once an operation is mastered, it becomes a routine. There isn't a cumulative aspect to an operation as there is with a series of facts. What this means for teaching and learning is that the student must not only learn the operation at its various stages, but also accumulate the host of facts which are products of the operation. The bulk of instructional time goes to teaching the facts. When the emphasis is in this direction, the ratio system we have discussed works quite well, because we are working with quantities. If the problem is not an insufficient supply of facts but a breakdown in operations then the ratio concept is of little use. At the point of breakdown, we are dealing basically with a quantity of one—the one operational stage which poses the difficulty. In a breakdown of this sort the focus of attention is on learning the operation or on preparing material which will facilitate the mastery of it. As the student begins to catch on to the process, the ratio system is reintroduced, so that progress will be diagonal across both operations and their associated facts.

Assessment Input

An analysis of various work samples will generally indicate operational deficiencies on the part of the student. Performing hypothesis testing under direct observation conditions will also provide confirmation concerning the areas of difficulty, and indicate possible steps for remediation. Unfortunately, due to the printed nature of these training modules you do not have access to direct observations, but are limited to samples of previously completed work. Not being able to observe the following child as he actually participated in a math activity is a definite disadvantage. Relying on an analysis of his work sample, however, we can determine the knowns and deficiencies of this 13 year old boy. Give yourself sufficient time to examine the work sample on workbook page W-54, identify the specifics, and make some educated projections about what needs to be done before reading on.

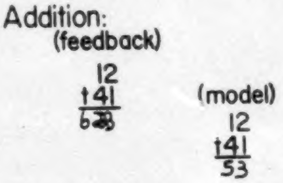
Referral information revealed that William is a boy of average intelligence in a regular sixth grade classroom. He has a happy family life, demonstrates good social skills, and has many friends. His performance in school is at grade level in all subjects except mathematics; there he seems to be functioning on a second grade level.

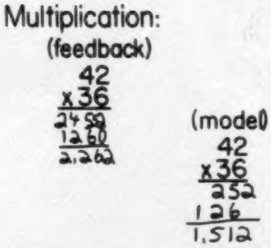
A close examination of the work sample showed that he had good knowledge of addition, subtraction, and multiplication facts. His main problem consisted of the misuse of operations, including algorithmic errors. A second, compounding problem was in use of place value. Check over his work sample once again and see if you agree with these comments.

Preparing Material for Students

After isolating the problems, there is still the task of deciding where and how to proceed. What is the instructional sequence? What operations complement each other and can be taught together? How is material to be presented and at what rate? These are some of the important questions that need to be addressed during instructional planning. Teaching someone to master a math operation or operations, especially after he or she has experienced difficulty for an extended period of time, requires thorough planning along with a good degree of imagination. One must be sensitive to the performance cues of the student while making needed adjustments to shape behavior. In this area of instruction we have found the concepts of modeling, prompting, practicing, and fading to be very helpful. These four concepts represent a sequence in which material is to be presented to overcome instructional difficulties. However, material may be presented in such a way that a student immediately grasps the concepts being presented, thus negating the need for any further steps within a sequence. What and how much is needed with respect to the use of these four concepts as teaching tools really depends upon the student and his ability to acquire new information.

Modeling. In teaching a new math operation, modeling of the correct procedures and responses is required. It provides the student with a mental picture of what the finished product should look like and how to proceed in an imitative manner to produce the desired response. As a teaching tool, modeling undoubtedly represents the most consistently applied instructional technique available to teachers. When trying to correct for faulty operations, it is often beneficial to contrast an error response with the corrected model. For example, in William's case contrasts of both addition and multiplication were presented.

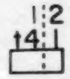




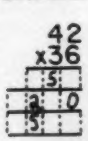
Modeling in this fashion frequently enables the student to see where his error is occurring as well as compare what he is doing wrong. Drawing attention to the salient features helps the student discriminate correctness from error, and allows him to make the types of associations that facilitate mastery. The effectiveness of modeling, of course, depends upon the performance of the student. If the student is able to function independently of further teacher assistance, then the modeling was effective, and additional intervention is not needed.

Prompting. If the child is still unable to unlock the algorithm procedures necessary to master an operation, then the diagnostician may resort to prompting the desired responses. In prompting, attributes which help the student complete the desired tasks are cued. This can be accomplished through organizing the visual stimuli to control for the ordering of responses as in working in columns or regrouping, or by providing partial answers at the subproduct and product levels of problems. For William, we prompted in the following manner.

ADDITION:



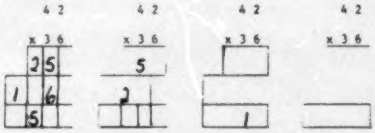
MULTIPLICATION



The lines and boxes were used to eliminate (1) crossing algorithmic rules from one operation to another, and (2) place value errors. Since facts were not a problem, instruction focused on working addition from right to left by columns, and emphasizing one digit placement in each box in the subproducts of multiplication. The diagnostician continued to monitor William's performance as he "walked through" the various prompted problems.

Practicing. If correct responses are to be learned and retained, then they must be practiced. This is true for drill activities and concluding tasks at the modeling, prompting, and fading stages. In order for practice to be effective though, it needs to be spaced and not massed. It also needs to reflect the speed at which the individual can work and not an arbitrarily established value. Using the concept of an instructional ratio and the guidelines discussed throughout this series of curriculum based assessment segments should help you plan practice events which meet the curriculum needs of the student. It will be the student's performance which will alert you to the need for practice, how much, and when it should be reduced per assignment.

Fading. Fading is the gradual removal of the prompted stimuli. Once the desired response has been reliably achieved through the use of prompts it becomes necessary to gradually remove those artificial features which serve to cue certain responses. Any abrupt removal of prompts could have an adverse effect on learning, stripping the student of all available aids. The final teacher/learner goal is for the student to be able to produce desired responses spontaneously without relying on external cues. To accomplish this, peripheral features should be removed first while the more salient aspects should be removed last. For example:



Working with William in this manner should help him align the subproducts and correct this algorithm error, while focusing on place value deficits.

Participant Worksheet

Using Wiliam as the study case, provide a brief rationale on how you would attempt to overcome his operational and place value difficulties. Finally, prepare a concluding math task which could be given to him. You may use whatever prompting or fading you feel are necessary to instruct the boy. Remember though, create the task exactly as he would see it! In preparing the task you might find that using complementary operations will be to your advantage. Upon completion of the assignment see the Appendix for comparative purposes.

Progress Measurement

Measurement of a child's progress in mathematics, as in reading, is multifaceted and multipurpose. In mathematics, again, we look at performance rate from two perspectives: (1) the rate of acquisition or ability to assimilate new information; and (2) the proficiency or fluency in recall and use of learned facts and concepts. A third factor in evaluating mathematics performance, and one which corresponds to comprehension in reading, refers to the ability to understand and apply quantitative concepts to solve mathematical problems.

Rate of Acquisition. We frequently find teachers charting data on the student's proficiency and rate of recall on sets of math facts. These charts generally provide a cumulative profile of the student's progress over a period of time. This type of charting, however, is more likely to reflect the pace at which the teacher is teaching than the pace at which the child can progress. The pace of the child is called his rate of acquisition and refers to the amount of new information he can learn and retain during each training episode. To familiarize yourself more fully with this concept in mathematics, take the time to examine Daryn's performance on workbook pages W-55 and W-56 and calculate his rate of acquisition.

Daryn was capable of learning *one* new item per lesson. That was his rate of acquisition. Naturally, we would like to see an increase in his acquisition rate and will provide him with more challenge; but the amount of challenge should only be increased by one. If he had been picking up three or four items each time, we might have tried for five or six. We are trying to determine the actual number of new items that we can present to the student and still be relatively sure that they will be mastered. As you can see, this type of measurement isn't going to provide very precise data if used only once; but if used in an informed trial and error approach, it can yield a representative value of the child's ability to learn and retain new facts and concepts. Even though the Instructional Delivery Model recommends a challenge ratio in math of 15 to 30 percent, and the ratio tends to self-correct for student ability because the number of new items grows geometrically with the amount of known material, there are children who learn more slowly, and their instruction needs to be adjusted accordingly.

Rate of Fluency

Fluency is proficiency or speed in responding to previously learned material. It is a useful measure for the teacher, because it allows him or her to estimate the ease of an assignment and the necessary time allotment. When responses are correct and immediate, little effort or time needs to be expended by the teacher in helping the student complete the assignment. Children who lack fluency require more teacher time and must exert more individual effort. When this happens, it may indicate the need for modification of assignments in order to avoid impending frustration.

Use of Math in Applied Settings

The end product of reading instruction is comprehension and communication via the printed word. A similar goal applies to mathematics. Instruction in mathematics should provide tools and concepts that can be used in applied settings. The application of mathematics needs to be functional. A teacher cannot be satisfied with the development of rote skills which a child is unable to associate with or apply to the real world. Comprehension and application of quantitative concepts, like comprehension in reading development, are the logical conclusions of instruction and must be fostered. Proper application, after all, is the final and true measure of understanding.

Monitoring Progress

School systems and teachers are naturally and rightfully concerned with the progress of their students in mathematics. Schools routinely administer standardized achievement tests each year to measure student progress and evaluate teaching effectiveness. For most school systems and children, normative data are sufficient to measure progress; but for the curriculum casualty child, more instruction-related and definitive data are needed. Again, the use of direct observation and product analysis techniques yield the type of specific information most relevant for instruction and most sensitive to the measurement of student progress.

APPENDIX 1

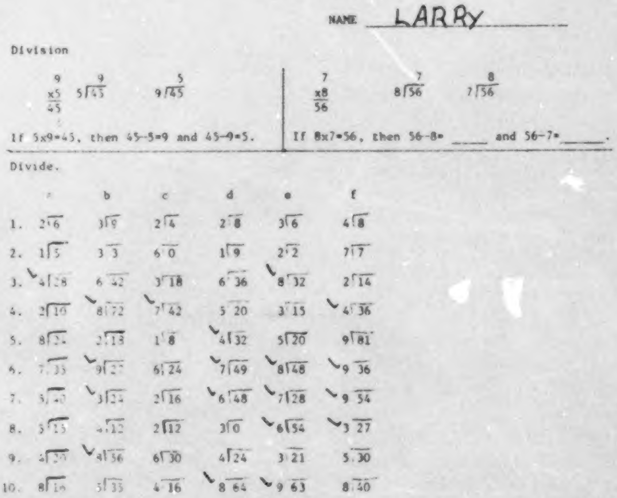
Case Study—Larry

Converting Larry's incomplete repertoire of multiplication facts into simple division problems was relatively easy as you can see in the following problems:

3⟌18	3⟌24	8⟌24		
3⟌27	9⟌27	4⟌28	7⟌28	
4⟌32	8⟌32	4⟌36	9⟌36	
7⟌42	7⟌49	8⟌48	6⟌48	
9⟌54	6⟌54	7⟌56	8⟌56	
9⟌63	7⟌63	8⟌64	9⟌72	8⟌72

This type of conversion, however, is meaningless if the teacher or diagnostician is satisfied with merely selecting division assignments for students from printed or commercial materials. Printed materials are obviously insensitive to the needs of students with limited ability. When assignments are selected from such materials, the random scatter or range of problem difficulty within an assignment frequently exceeds the capability of the student. Under these conditions, the assignment is only frustrating to the student, not useful. An example of this random scatter and its inevitable consequences can be seen in a commercial assignment given to Larry. The problems looked easy enough since they only required very simple division, yet the range of multiplication facts needed to do well on the assignment far exceeded his incomplete fact system. The check marks indicate those areas of personal deficiency.

Work Sample 8



NAME LARRY

Division

$9 \times 5 = 45$ $5⟌45$ → 9 $9⟌45$ → 5

If 5x9=45, then 45÷5=9 and 45÷9=5.

$7 \times 8 = 56$ $8⟌56$ → 7 $7⟌56$ → 8

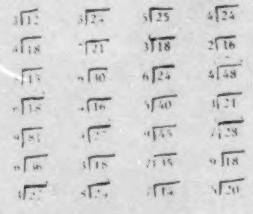
If 8x7=56, then 56÷8= ____ and 56÷7= ____.

Divide.

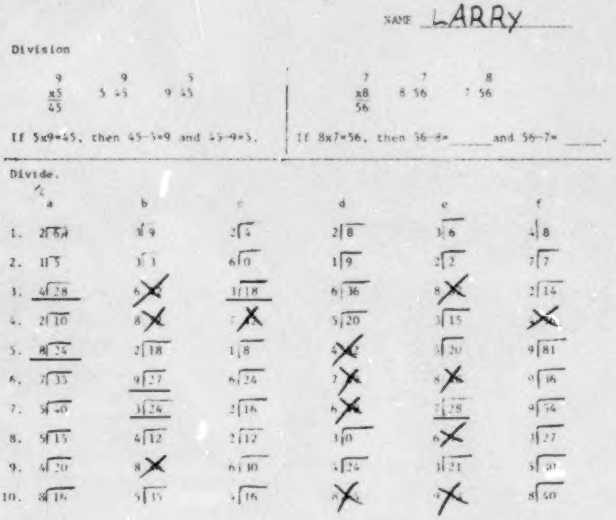
	a	b	c	d	e	f
1.	2⟌6	3⟌9	2⟌4	2⟌8	3⟌6	4⟌8
2.	1⟌5	3⟌3	6⟌0	1⟌9	2⟌2	7⟌7
3.	✓4⟌28	6⟌42	3⟌18	6⟌36	✓8⟌32	2⟌14
4.	2⟌10	✓8⟌72	✓7⟌42	5⟌20	3⟌15	✓4⟌36
5.	8⟌24	2⟌18	1⟌8	✓4⟌32	5⟌20	9⟌81
6.	7⟌35	✓9⟌27	6⟌24	✓7⟌49	✓8⟌48	✓9⟌36
7.	5⟌40	✓3⟌24	2⟌16	✓6⟌48	✓7⟌28	✓9⟌54
8.	5⟌25	4⟌12	2⟌12	3⟌0	✓6⟌54	✓3⟌27
9.	4⟌20	✓4⟌36	6⟌30	4⟌24	3⟌21	5⟌30
10.	8⟌16	5⟌35	4⟌16	✓8⟌64	✓9⟌63	8⟌40

Check your answers. Record your score. Perfect score: 60. My score: ________

A better assignment for Larry would have been this teacher prepared worksheet:



Of the 28 problems, eight were challenging responses. The others contained the known facts necessary to provide the student with a high degree of success. It is not always necessary for the teacher to construct material to assure an instructional level though. Time may be used to greater advantage by the teacher if an instruction level on an assignment is created by merely altering the assignment to reflect a more controlled teaching sequence. The next illustration shows this type of alteration. Those problems which were not in sequence were crossed out, and those which were in sequence were underlined.



NAME LARRY

Division

$$\begin{array}{r}9\\ \times 5\\ \hline 45\end{array}\qquad 5\overline{)45}^{\,9}\qquad 9\overline{)45}^{\,5}\qquad\Big|\qquad \begin{array}{r}7\\ \times 8\\ \hline 56\end{array}\qquad 8\overline{)56}^{\,7}\qquad 7\overline{)56}^{\,8}$$

If 5x9=45, then 45÷5=9 and 45÷9=5. | If 8x7=56, then 56÷8= _____ and 56÷7= _____.

Divide.

	a	b	c	d	e	f
1.	$2\overline{)6}$	$3\overline{)9}$	$2\overline{)4}$	$2\overline{)8}$	$3\overline{)6}$	$4\overline{)8}$
2.	$1\overline{)5}$	$3\overline{)3}$	$6\overline{)0}$	$1\overline{)9}$	$2\overline{)2}$	$7\overline{)7}$
3.	$\underline{4\overline{)28}}$	$6\overline{)}$[illegible]	$\underline{3\overline{)18}}$	$6\overline{)36}$	$8\overline{)}$[illegible]	$2\overline{)14}$
4.	$2\overline{)10}$	$8\overline{)}$[illegible]	$7\overline{)}$[illegible]	$5\overline{)20}$	$3\overline{)15}$	[illegible]
5.	$\underline{8\overline{)24}}$	$2\overline{)18}$	$1\overline{)8}$	$4\overline{)}$[illegible]	$5\overline{)20}$	$9\overline{)81}$
6.	$7\overline{)35}$	$\underline{9\overline{)27}}$	$6\overline{)24}$	$7\overline{)}$[illegible]	$8\overline{)}$[illegible]	$9\overline{)36}$
7.	$5\overline{)40}$	$\underline{3\overline{)24}}$	$2\overline{)16}$	$6\overline{)}$[illegible]	$\underline{7\overline{)28}}$	$9\overline{)54}$
8.	$5\overline{)15}$	$4\overline{)12}$	$2\overline{)12}$	$3\overline{)0}$	$6\overline{)}$[illegible]	$3\overline{)27}$
9.	$4\overline{)20}$	$8\overline{)}$[illegible]	$6\overline{)30}$	$4\overline{)24}$	$3\overline{)21}$	$5\overline{)30}$
10.	$8\overline{)16}$	$5\overline{)35}$	$4\overline{)16}$	$8\overline{)}$[illegible]	$9\overline{)}$[illegible]	$8\overline{)40}$

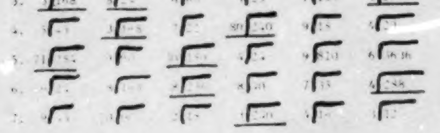
Check your answers. Record your score. Perfect Score: 60.
My score: __________

To help Larry master the remaining multiplication facts will require careful control in the selection of division problems. The teacher's selection should represent an appropriate instructional sequence and ratio of success. In order to restrict the amount of challenge, a decision was made to teach only those facts which appeared above the line on the initial conversion table. This constituted only 30 percent of the facts still to be mastered. The instructional sequence consisted of the following problems:

$$3\overline{)18}\qquad 3\overline{)24}\qquad 8\overline{)24}\qquad 3\overline{)27}\qquad 9\overline{)27}\qquad 4\overline{)28}\qquad 7\overline{)28}$$

As you can see, there were actually four new problems. The rest represented the reverse order of the facts.

Using the above problems as the instructional sequence, it is possible to prepare the concluding task. To do this, problem selection must conform to the criteria for an instructional level. The amount of challenge should not exceed 30 percent while the number of knowns should be at least 70 percent. Problems representing new facts should be randomly dispersed throughout the concluding task to assure successes between the various challenging responses. An example of this form of problem selection and control can be seen in the following teacher prepared material to be used with Larry:



Time is of the essense in teaching. If you can shorten the time by combining assessment and instruction, it will be to your advantage and to the advantage of the student.

But what if a teacher or diagnostician wants assignments to do more than control the instructional sequence and ratio of difficulty? Do they have to return to a traditional assessment mode to determine more about the child's ability? Assignment selection and instruction always require analysis and, in many cases, adjustment. Why not occasionally create an assignment which accomplishes the purposes of both instruction and assessment? In Larry's case, we knew the instructional sequence we wanted to begin teaching with; we also knew that he understood the operation of simple division. We did not know if he understood all of the algorithmic rules, could use two digits in the divisor, or understood place value such as the use of zero in the quotient. Still controlling the instructional sequence for difficulty (the underlined problems), we created a series of problems which would help answer these questions. If he demonstrated difficulty at any of these stages, adjustments could be made prior to the next instructional experience.

At all times, try to make good decisions about what to teach based on the input you have about the student; but do not be afraid to do some hypothesis testing along the way.

APPENDIX 2

Case Study—William

Since William did not demonstrate deficiencies in the basic fact systems of addition, subtraction, and multiplication, it was possible to focus remedial attention on operational and place value errors. Because of his age and apparent ability, the teaching of basic substraction was skipped even though it complements addition. It was postponed until the process could be taught in combination with division.

Our initial focus, therefore, was to incorporate the teaching of addition and multiplication while prompting for place value. We started with simple two row, two column addition without regrouping, then quickly went to regrouping while increasing the number of rows and columns. Multiplication, which requires the use of regrouping and addition skills, was then introduced. Prompts were provided and gradually faded to ensure performance success. An example of a concluding task which complemented William's addition and multiplication needs has been included on page W-54 of the workbook.